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Our cover is from *The Playground* by Carl Lundgren, which won the Special Merit Award at the Miami Worldcon this year. The same convention named Mr. Lundgren the Best Fantasy Artist of 1977.

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Pro-File

TOP: Lewis Shiner and Brian M. Fraser
 BOTTOM: John A. Taylor and
 and Jack Williamson
 OPPOSITE PAGE: Marvin Kaye
 and Parke Godwin



IN THIS issue, our nonfiction takes a look at two young industries: space exploration and science fiction. Our look at science fiction inaugurates a new editorial policy for *Galileo*. In the months to come, *Galileo* is the place to look for new information on sf. We are going to be examining trends, looking at the heaviest concentrations of money and talent, interviewing the arbiters of taste, writing the stories of success and those of failure. We are going... (who's that guy shouting "to boldly go where no man has gone before"?). If you stay with us, you'll see that every one of these features will be as exciting as this issue's essay by Alexei and Cory Panshin.

The Panshins agreed to help us begin our new departure with "The End of the Ghetto?", an essay written expressly for *Galileo*. Their belief that something unusual (and obviously commercial) is happening to sf will strike a responsive chord among sf aficionados. We can't think of a better way to start a thorough examination of the industry. Alexei Panshin has been selling his science fiction since 1960 and won a Nebula for his novel, *Rite of Passage*, in 1968. His critical study, *Heinlein in Dimension*, is

considered by many to be a classic. Married in 1969 to a well-known and active sf fan, he and his wife Cory Panshin have collaborated in their work since the early 1970s. They have written *SF in Dimension* (reviewed elsewhere in this issue) and *The Son of Black Morca*. They are currently working on *The F&SF History of Modern Science Fiction* and a novel with the working title "The Adventures of Heriberto Pabon on the Mungly Planet." The Panshins live on a farm in Pennsylvania.

Our interview with **Gordon R. Dickson** in this issue is both a look at science fiction (by looking at one of its best-known practitioners) and a look at the space exploration industry (by asking him for his opinions of the future of man in space). Mr. Dickson has been writing science fiction for twenty-seven years, winning the Hugo in 1965 for his story "Soldier, Ask Not." His avid fans appreciate him most for his novel *Dorsai!*, which became a life's work on the theme of the intui-tional superman, not to mention his collaboration with Poul Anderson on the humorous Hoka series, collected in *Earthman's Burden*.

The interview was conducted by **Brian M. Fraser**, whom *Galileo* is pleased to welcome back (his previous

contribution was an interview with Kelly Freas which appeared in #3). Mr. Fraser is an active member of the Science Fiction Research Association, having given a presentation on teaching science fiction at SECON 8. He teaches at the University of Toronto in science fiction in the media and, when not doing sf, he works as Supervisor of News and Information of the Computer Communications Group of Bell Canada and writes on computer communications.

Earth/Space, Inc. returns to *Galileo*, this issue with a continuation of the study, "SSoar." The title is an acronym for "single stage orbit and return," signifying a space vehicle with the potential for economical space exploration, affordable by private investors. Earth/Space, Inc. is critical of the wasteful NASA effort in space exploration, with its throwaway rockets, single fuel-type propulsion, and energy-intensive antique vehicles. Earth/Space, Inc. is a Santa Barbara-based company, headed by its founder, Paul L. Siegler. Mr. Siegler's background includes the American Rocket Society, the British Interplanetary Society, Harvard Business School, U.S. Air Force Strategic Air Command (Commander of a Titan II Launch Crew), Grumman Aerospace

Authors

Corporation, and General Electric. In addition to his company presidency, he is editor of *Earth/Space News*.

Our fiction in this issue showcases the concept of nonhuman intelligence. "The Oak and the Ash," a story about a program to train apes for warfare, is the contribution of **John Alfred Taylor**. Mr. Taylor is a poet of some note (two hundred published poems in everything from *Kenyon Review* to *Poetry Northwest*) who claims he became interested in science fiction "before he was old enough to know better." He is Associate Professor of English at Washington and Jefferson College and an avid reader of *Aviation Week* ("so I'll know," he tells us, "what kills me").

On the same theme, **Lewis Shiner** offers his story, "Tinker's Damn." A scientist who loses his objectivity and a forlorn android who suffers the consequences are the characters. Mr. Shiner works as a technical writer for a Dallas-based computer firm and reports to us an affection for beer and paperback books. He edits a magazine, *Tales from Texas*, and says his tastes run to surrealism.

"A Genuine Old Master" is the first contribution of **Marion Zimmer Bradley** to our pages, a departure from her best-known work, this story is humorous in effect and intent. When Ms. Bradley writes a science fiction novel, she says, she thinks of it "not as 'a science fiction novel' but just as a novel which happens to be about science fictional backgrounds and ideas—but the characters are always people, people I want to tell a story about." She has been writing for an audience since she was eleven (earlier work was written exclusively for her mother) and has been reading science fiction since she was five. Her fans will be pleased to know there is more about her in the "Star Chamber" of this issue.

Jack Williamson appears once again in *Galileo* with "Slave to Chaos," a story of the far future about artificially mutated meta-humans. Mr. Williamson hardly needs introduction to followers of science fiction: not after two and a half million words of published magazine fiction and nearly thirty books. He is probably best known for *The Humanoids*, *Darker Than You Think*, and *The Legion of Space*. As if his fiction were not sufficient contribution to the field, he has been instrumental in making sf respectable: doing a doctoral dissertation on H.G. Wells, attaining the

academic rank of Distinguished Research Professor in English, and compiling a list of 500 college-level courses in his book *Teaching Science Fiction*. When we asked Mr. Williamson about the accomplishment in which he takes the most pride, he said "living to see 50 years of sf." What can you say in the face of that kind of modesty? Williamson fans take note: "Slave to Chaos" is part of a novel in progress.

Galileo takes its first turn at serializing a novel in this issue. It involved a major editorial decision to run *The Masters of Solitude* this way, but we thought it would be a nice way to get our bimonthly publication schedule started (it commences with issue #6). And, besides, it is an outstanding novel: ...we expect a Hugo nomination for it at the very least. The nonhuman intelligence embodied in the story might be most apparent in future installments.

Parke Godwin constitutes half the authorship of this novel. He is a professional writer living in New York (*A Memory of Lions*, Popular Library) who has always had an interest in witchcraft, although not the "steaming-cauldron, diabolism, Exorcist sort of thing, which has little, if anything, to do

with the realistic, life-worshipping nature of western witchcraft." *Masters of Solitude* reflects, in part, his desire to explore the possibilities of a society "based on witchcraft as a working, day-to-day way of life in which belief and practice are inextricable."

The other half of this team is **Marvin Kaye**, who—we are told—drew up the original brief outline for the novel. Mr. Kaye teaches mystery writing at NYU and his previously published books include the novel, *Bullets for Macbeth*, as well as the rest of the Hilary Quayle mystery series. He wrote the popular "Incredible Umbrella" stories for *Fantastic Stories Magazine* and edited *Fiends and Creatures* and *Brother Theodore's Chamber of Horrors*. Mr. Kaye is also a professional magician.

Finally, our poet this issue is **Peter Dillingham**, who offers us "Ultima Preytor." Mr. Dillingham's work has appeared in *2076: The American Tricentennial*, edited by Edward Bryant, and is scheduled to be anthologized again twice this year. He is a fanatical cross-country skier and hopes "sf readers will continue to take a little time off from the joys of a fast run down the slopes to let us sf poets show them some of the joys of gliding."



Brian M. Fraser

Interview: Gordon Dickson

It's not so much to the planets, as into the hard vacuum of space where there are real advantages.



GORDON R. DICKSON has been writing Science Fiction since 1950 and has published more than 30 novels and over 100 SF short stories. He has served two terms (1969-71) as President of the Science Fiction writers of America.

Dickson is the author of *Tactics of Mistake*, *The Far Call*, *The Alien Way*, *Mutants*, *Sleepwalker's World*, and the *Dorsai* novels. He won a 1965 Hugo for "Soldier, Ask Not" (novelet) and 1966 Nebula for "Call Him Lord" (novelet).

Brian Fraser, professor of an "SF in the Media" seminar series at the Institute of Social Communications, Saint Paul University, and the University of Ottawa in Ottawa, Canada interviewed Gordie Dickson about Man's future in space.

Fraser: How do you see our exploration of the Solar System? What are the limitations—technically, economically, socially—for us out there?

Dickson: I'm predicting a revivification, a sudden new explosion of spatial activity when we realize other interested people like the Russians and the Chinese for example, and just about anybody who has space potential nowadays—which is at least five

nations, maybe ten—are suddenly getting ahead of us. It's not so much to the planets, as into the hard vacuum of space where there are real advantages.

The advantages of getting off-planet are that, not only engineering, but engineering production can be done in the hard vacuum up there that we can't duplicate down here. Hospitals have all sorts of possibilities—the chance to handle patients without the killing drag of gravity upon them and upon what they do. And there are many other applications, aside from energy collectors and other obvious things.

Now, for example, all we need is one good way of getting the energy down to Earth from space. For while solar collectors are fine at Phoenix, Arizona, they're not so good up where I am in Minneapolis. Not because we don't get sun in the winter, but because our winters are just so cold that they can't handle it.

On the other hand, there's no end of room up there to put up solar collectors; it's a matter of bringing it down. We're merely on the threshold of the laser age and the time may come when we have something like a laser beam half-a-mile in diameter, this pumping in from space all the energy a continent needs.

Present day lasers, gas lasers, have an unlimited potential as far as size goes. But the applications of that size haven't been worked out yet. Theoretically, one could act as a carrier beam for the type of energy we could collect from, say, hundreds, or thousands of square miles of space solar collector units. And in space, of course, you get constant sunlight.

Now, it might be that this energy can only be beamed down. But we'll probably have better storage capacity—something will come up in the way of better storage capacity. Anyway, there are many things; there are the possible plasma reactors. People forget that we've been having a good deal of basic research, much more so than was ever envisioned before 1940, since World War II. A lot of the benefits of that are going to start paying off for us. When it does, there's going to be a fantastic change.

I've been predicting a neo-Puritanism around the turn of the century as sort of an end-result of the sudden ethical awareness that interests people nowadays. And, beyond this, a pioneer-type explosion in which people feel very energetic, optimistic. Probably everybody will be working at one or two jobs

and studying at the same time. Both health and life possibilities will be greater. People will say, "Yes, I plan to spend fifty years here on Earth and then probably off-Earth to so-and-so."

Frazer: When will we get to Mars?

Dickson: Well, I wrote *The Far Call*, a portion of which was serialized in *Astounding (Analog)*, calling for the original NASA timetable 1983-84. I picked 1983. It's 1983 or 1985, every other year, that the window appears. If not then, within six to twelve years, we'll land on Mars. We will be using Mars, setting up stations there, I think, by the turn of the century. And I am damn sure that by 2025 we will be getting useful feedback from whatever stations we have on Mars.

These may turn out to be commercial colonies. It seems to me that this is where space flight is headed, where it's going to come out. I think, myself, that we're moving into an era in which government and business are becoming integrated. I say this without any intention of sounding political.

It's just that we are getting overloaded with people, even at the present levelling-off of birth in this area—anyway in this part of the world. The population explosion is going to bring us to a point where we're going to be pretty tightly restricted. In fact, you and I may have to go through about ten to twenty years of fairly tight living, with shortages of everything from soap to soup to gasoline before we come out the other end.

To solve our energy problems right now, we need either something unknown coming out of the woodwork, or a cracking of the practical problem of supplying all our energy needs by nuclear fission, which is here.

The same way, getting out to other stars, we have certain practical problems to crack, but I don't see these being long-delayed. For one thing, the human race, if you look at past history, right back to caveman days, has a habit of going around its problems rather than through them. The first time a caveman came to a river he couldn't wade across, he saw no alternative but to swim like a fish. But, of course, he didn't do that. Boats, even the most primitive boats, didn't operate like fish at all. And similarly when he came to flying machines. Our flying machines don't flap their wings like birds, you know; they are soaring devices essentially but powered soaring devices.

And the same way, out beyond the

solar system, we're up against new problems. One of them is fuel and one is time—well, you could call it distance-and-time, but the practical problem is how to get the fuel to go that far.

There's a number of potential answers that have come up in Science Fiction. One of them is the enormous RAM-scoop that goes out in front of the spaceship. You could even use a force-field, a force-field in the sense of an electrical field or something, rather than a solid scoop, which simply funnels the debris of supposedly empty space into the RAM-jet and keeps it working.

There have been suggestions that we could use (and we could, if time wasn't a factor) the lights of stars to sail between the worlds with tremendous sails. Space is another thing; it'll be entirely different when you get off the limitations of this tiny world.

There will be solutions. My personal opinion is that we will get practical results from Mars in 2025. I don't see us taking a hundred years after that to get to the nearest stars, even if we have to send a ship very slowly, some large ship loaded with enormous quantities of very dense material, like gold, with a very feeble drive but one that builds and builds and builds.

That's the beauty of it. If you want to go someplace in space, particularly if you're willing to spend unlimited time. This is the way to get to Arcturus or Alpha Centauri now. It might take 103 years at one Gravity. You can start out at one Gravity with a relatively cheap push—a couple of disposable rocket units can get you going. From then on, you just give it a little extra fusion, you never lose momentum, keep picking up speed and pretty soon you could get up to at least an appreciable fraction of the speed of light. You get there a hell of a lot faster.

Of course, in human time, it could take a lifetime. But, who knows, maybe in space our lifetime is going to be 150 or 200 years, something like that. Many things will be different. The point is that once any sensible mind—and we don't have to assume that humans are supermen or specially blessed in order to do it—any normally inquiring mind that gets into an arena like outer space or space beyond this planet, there will be ways of playing with the physical laws to get results. Sooner or later, we're going to find a combination which works.

As a matter of fact, there may be many things which we don't realize that



we can take advantage of. Even if there weren't, we'd solve the problem. Even if it takes a hundred years to get to the nearest habitable star, such as Alpha Centauri. Alpha Centauri, as you know, is a G-type star like Earth's. It's a yellow sun of a certain size and of a certain output of light. The stars are divided into the blues, the whites, and so on down the line and these are tagged with letters usually, the coding is available in any book about the stars.

Fraser: Once we get telescopes and radio telescopes out into space will we get a better fix on where we want to go?

Dickson: Oh, yes. There's no doubt about it. We can't even be sure of the real distance between us and the nearest stars. We're estimating those distances on the basis of a certain amount of pre-conceptions which seem to be valid from what we know down here on Earth. But, down here on Earth, we're at the bottom of an ocean of atmosphere and we're guessing at what things are like out there. It may be that Einsteinian physics is not invalid, but that it's only part of the total story. And that the rest of the story has usable things that will allow us to move around much more easily.

Fraser: What is the theory of "hyper-

space" that SF writers use to get around the speed-of-light limit?

Dickson: It depends on how the theory goes. The one I use has only one advantage, and that is, like any good Science Fiction piece of machinery, it is theoretically possible at least. There is a present physical theory that says, in effect, you can know the velocity and position of an object like an atom. You can know one or the other exactly, but not both at the same time. It may also be that every piece of matter exists primarily at one spot in the Universe but at the same time exists everywhere else as well to a certain extent. In other words, it has one sort of focal point at which we perceive it as a distinct atom having a certain location. My drive based on this isn't a drive, of course. What I do is simply change the focal point of all the atoms in a particular object, which in my case is a spaceship with people and including everything else in it, and establish that focal point at another space, some distance away.

The only drawback to this is that you can't be quite sure of both locations at once. When you land at the new location, you have to re-figure out where you are and then calculate your next jump. In other words, the larger

the distance you move away, the less sure you are and the greater the error in your landing. This is a means of moving light-years at a jump, but it's held down a little bit so that you don't immediately go from here to some other island galaxy 200 million light-years away. There is some interior time-lapse and this is mainly for story logic where it's useful to have certain machinery.

Fraser: Might there be instances where you would want to have instantaneous transmission?

Dickson: Well, in that case, I'd simply write a story that set it up. It's just that most of my work has been dealing with the Childe Cycle and other stories where it's convenient to deal with this process of travel between worlds.

Fraser: How would that theory affect normal activities on Earth, like elevators?

Dickson: Not only elevators, but very probably any travel above the surface of the Earth would be instantaneous. You'd walk into a telephone booth here and step out of a telephone booth in San Francisco—this type of situation.

Fraser: How about mail delivery?

Dickson: Mail delivery, too. Except, for recordable documents such as mortgages, I think it is going to be mainly either voice communications or writing the same sort of thing that you can do nowadays by getting a couple of 'black boxes' put on at each end and you can send pictures or handwritten messages, anything you want, over the telephone wires. That day is already here. On long distance, you don't have any appreciable time lag so for all practical purposes, we've got instantaneous transmission of voice and pictures over the surface of the Earth.

Fraser: How about communications in outer space?

Dickson: Well, right now, light is considered the limiting factor. Which means that even between here and the asteroid belt there'd be some time lag. I'm guessing—I'd have to sit down and figure it out—but I'd guess there'd be something between seven and 25 minutes time lag. In other words, if I spoke to you via a laser link over a satellite around Earth to a satellite that beamed to you wherever you were, somewhere at some particular point in the Asteroid Belt, the satellite-to-satellite time lag would be seven to 25 minutes. I'd say something and then I'd have to wait 25 minutes before you got it and another 25 minutes before your answer came back.



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In effect, I'd say something, look at you in the screen and I would have to sit and watch you waiting to hear, then, all of a sudden, 50 minutes later, your eyes would light up to me and you'd answer. Even that is awfully good, considering the distance.

We tend to underestimate natural weights, distances, powers. Most people are used to the oceans but they don't realize what a tremendous body of material the oceans represent. They don't even realize what a tremendous amount of space there is on the continental shelves—it's almost the same area as the continents themselves. We'll be moving into that in 10 to 20 years. In fact, we're on our way there now.

Fraser: Will we explore the seas before we go out to outer space?

Dickson: No, I think we'll do it simultaneously. All these things will be happening. There's a great deal to be learned from the oceans, which will be useful outside for an ocean of methane gas on a globe planet like, let's say, one of the satellites of Jupiter. I'd have to make sure whether methane would still act as a liquid under those conditions but there would be similarities.

Life is much more precious than we think. They've found bacteria in hot

springs at 140 degrees of temperature. And they've found life in the Antarctic—very primitive life, bacteria or fossil algae—under living conditions which are way below zero. So intelligent life may exist under all sorts of conditions.

It's possible to postulate, as you undoubtedly know being a Science Fiction reader, silicic life or some form like that under conditions that are far beyond our temperature range.

But even if life is restricted to a world like ours, with just the right amount of water vapor and other elements, and just the right distance from a go-type star, a warm yellow sun like ours, there is still a hell of a lot of potentially habitable or inhabited planets in the galaxy. I forget what the figure is offhand, but it's something like at least a hundred million.

Fraser: Would it take us a billion tries before we found the habitable ones?

Dickson: Possibly, under our present set-up. But suppose we develop, not necessarily an interstellar drive (we might do that, too!), but some means of scanning the planets like ours. It's conceivable to imagine a scanning device which would not only discover the types of sun you wanted but would be able to check the surface and the atmosphere to tell whether the planet

was habitable. Now, having established that they were habitable, then we could concentrate on these planets.

This procedure needn't even take a human. We could take a drone, and even our present technology a drone spaceship could take accelerations way beyond what a human being could do. A robot drone or a robotic spaceship could take something like 150 gravities anyway with the present state of technology.

Fraser: Would there be any physical constraints on building a spaceship?

Dickson: Well, as far as size, there is no practical limit. The big problem would be getting the materials up off the planet, machines and materials into orbit. And, given unlimited power, which you would get from nuclear fission, this would be only a matter of patience. Theoretically, given unlimited power, you could simply build an elevator from the surface to orbit. Now, of course it isn't practical to build an elevator that way. There's no reason for that kind of engineering, particularly to send up a stream of ferry rockets.


Fraser: Would there be any problem as far as strength of materials goes?

Dickson: Oh, not in the Earthly sense. But when you're dealing with light jumps, you might be dealing with potential differences in temperature and in sub-light speeds of strain, gravitic strains, which can get very high. If you're patient in the Universe, any kind of material might be suitable. In fact, Poul Anderson once wrote a story about a wooden space ship that was steam-powered just to prove it could be done. And it can—once you're off Earth, away from the gravity of Earth. But we'll probably be impatient. We'll probably come up with some material that can endure a great deal of strain to get there a lot faster.

Fraser: What would be the physical and psychological effects of "light jumps"?

Dickson: Well, it's impossible to imagine—that's one answer. The other answer is that probably whatever it is may be a lot less than travelling at lesser-than-light speeds with the time contraction, the Fitzgerald contraction in which you age more slowly than people back on Earth and come back to find nothing but your grandchildren. Or you come back and find nothing but your great-great-grandchildren. You could have a culture shock that's just fantastic. In other words, you come back to find yourself a stranger in your own world.

Interview



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All these things are pretty problematical. What I think is certain is that we've gone so far just to get to this point, from something that just barely crawled out of the prehistoric sea to the land—from that to you and I sitting here in this room and talking about such things. Having put something in orbit around Earth is the big part of the jump. The first part of the journey is the hardest; it'll get easier as we go along.

Fraser: What do you think about SF space travel in which they develop a Universe-type ship which goes on generation after generation or a spaceship which has frozen colonists aboard during the duration of the voyage?

Dickson: These are very primitive ways of dealing with the situation. Really, I think that even within the next fifteen or so years, they'll be shown to be very primitive ways of making space travel.

One of the earliest Science Fiction stories, back in the Thirties or Forties, was about a spaceship that sets out, through a generation ship or something, for a near sun like Alpha Centauri. And just as they get there, they discover all sorts of ships waiting for them with a hero's welcome. Because, in the meantime, people learned to get there overnight. And this is undoubtedly what'll happen.

Fraser: Do you think that a society enclosed within a spaceship would degenerate, or would it be able to develop its own faster-than-light drive?

Dickson: Well, here again, I don't think it would. People back here on Earth with the resources and the population, the research of a whole planet to draw from would have a much better chance than somebody out in space. To get you out beyond a planet's atmosphere and gravity is enough to put you effectively in space, at least for research purposes.

I myself find it hard to believe that any spaceship, even one that's big enough to include imitation forests and lakes, could keep a population stable and reproducing for, say, four generations. The sample is just simply too small.

The human animal is not built merely to endure and survive, but to develop. In sending out a ship like that, we would be assuming that these people would be content merely to endure and survive for a number of generations. I think that within a generation or two there would be no breakdown, but at least rebellion against this idea. I don't think it would be a case of forgetting why the ship is out there. It would simply be a case of

saying "Nonsense, let's turn and go back." Also, possibly some fighting among themselves and a pretty rapid disintegration.

It might be that people simply won't reproduce in space. I don't mean for physical reasons, but for emotional or psychological reasons.

Fraser: What kind of programme or entertainment activities would these people have?

Dickson: The classical picture of this kind of ship shows them having all kinds of entertainment tapes. I think this is dead wrong in theory and practice. Any society like that, for sociological and psychological reasons alone, would do much better to draw its entertainment from its own members. Plays, chamber quartets by them would be infinitely better. Someone who plays an instrument can amuse himself with it all his life, even in he can't play it well. But any person can get tired of hearing the same performance over and over again.

Fraser: Do you think that there would be a problem in education because they wouldn't have a whole planet's teaching resources to draw on?

Dickson: There again the assumption is that there will be some kind of automated teaching laboratory. But if a ship of people like this is to survive, then again the teaching would have to be live—father-and-son, older generation to younger generation.

Fraser: Would they have to have research facilities to avoid getting decadent?

Dickson: No, the adults don't necessarily have to do research. But they have to have something that's satisfying. You have no trouble with the first generation that you put on such a ship. The trouble comes with the second adult generation. Some of them might want to do research and curse fate that "We were ever put on this ship." Certainly, they can learn enough to discover that they would have been happier back on Earth.

They would say, "Why am I sold in slavery this way? Why am I doomed to ride this spaceship? I didn't put myself aboard here! Why don't I have the same rights as other people?"

In fact, I would be surprised, in setting up a spaceship like this, that this weren't raised as a legal question. You have the right to call for volunteers. But you can't assume that these volunteers' children will also volunteer. You're giving the children no choice in the matter. And a good case could be made

for the fact that you haven't the right to do that. Even under our present law set-up, this has been something which hasn't been brought up.

Fraser: What would be the purpose in using this set-up for story purposes?

Dickson: As with most Science Fiction, it would be the handling of the situation. What if...? What if the starship was ready to go out; it was stocked, provisioned; the people were chosen. And Earth needed it. We knew enough about Alpha Centauri or wherever to know that we needed to get people there. Then, at the last moment, some wild-haired character went to a judge and said, "I want an injunction. I represent the unborn children of these colonists and I raise the point that you have no right to make them serve aboard a ship if they don't want to. They have the same rights to enjoy living on the Earth as the rest of us."

It's a damn good point, as I say, and this would be the story.

Fraser: What do you think about the solution of shipping frozen colonists?

Dickson: Oh, this is simply another way to by-step the sociological problems we run into on the Universe-type ship. I simply think it's clumsy.

Fraser: Would it be wholly automatic or have some kind of skeleton crew to monitor the frozen bodies?

Dickson: Well, the answer that almost all writers come to automatically is that you need both things. You need a completely automatic system and then you need to wake at the end, or you need some automatic device to wake your crew at intervals. I, myself, if I were about to be frozen, would very much opt for the skeleton crew. Theoretically, you could tag a Universe-type capsule onto a frozen one.

But these things are clumsy, present-day ways of dealing with the situation. Undoubtedly, it won't be done this way. I think Man won't go to the stars until he can go there with a fair amount of expeditiousness and comfort. Truthfully. But I also think he'll go there a lot faster than we think. Invariably, and this even includes Science Fiction writers, we always underestimate the future because it's always bigger and faster and more wonderful than we think.

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The End of the Ghetto?

And *Star Wars*,
seemingly, is only
the beginning.



SCIENCE FICTION has entered a season of change. It is not possible yet to say with any surety what things will be like when the period of fluidity is over. Not now. Not when those most centrally and intimately involved in the processes that are changing are in no agreement among themselves about what is happening. Like a flea on an elephant, we are involved in a dynamic process so immense that our precedents, our facts, our hopes and wishes are beside the point. All that we can do is hang on for the ride and see where we are when we arrive.

Here are some of the signs of change in the science fiction universe, as best a curious flea can see them:

The movie *Star Wars* has been the cinema success of 1977. For the first time, some of the delights of (40-year-old) science fiction have been realized on film. A vast new audience—immensely larger than the special superior few who read Jack Williamson's *The Legion of Space* and E.E. Smith's *Galactic Patrol* when they were serialized in *Astounding Stories* in those long-ago pre-Campbell days—has been thrilled out of its socks by tractor beams, rayguns and galactic rebellion, 14 GALILEO

stuff that written sf long ago left behind it. Even blasé readers have been tickled, their sense-of-wonder revived. How neat to see it, not just to imagine it, but to see it happen! It's enough to make a person trade in his Farrah Fawcett-Majors T-shirt for a newer and more potent display. It's enough to make people who don't ordinarily see movies return to movie theaters to see *Star Wars* over and over again.

And *Star Wars*, seemingly, is only the beginning. In November, a cartoon production of *The Hobbit* is to be shown on television. And shortly thereafter, *Close Encounters of the Third Kind*, a major sf movie made by Stephen Spielberg, the young director whose last movie was *Jaws*, is scheduled for release.

Already, as a result of the success of *Star Wars*, there is talk of many new sf film productions. Most of these, no doubt, will be exploitation quickies—*The Creature from the Black Lagoon* or *The Blob* in 1978 disguise. But surely, not all will be of this nature. From our own experience, we can say that there is currently a seemingly very serious interest in making a movie of *Rite of Passage*. The technology now exists to produce sf effects on film. If the

audience is ready to view genuine sf movies—and to pay for the privilege—the money to make genuine sf movies will be found. Hollywood may be stupid, but it's not dumb, not where profits are concerned.

We are left with a question which only time will resolve. Is the success of *Star Wars* an isolated phenomenon, a fluke? Or is *Star Wars* a first sign of a fundamental change? Along about 1985, will sf films be the commonplace product of Hollywood, as, say, historical costumers were the common romantic format of an earlier era? It is a sign of change in itself that the question can be seriously raised, even if it cannot yet be answered.

The magazine publications that feature sf are a second area of change within the science fiction microcosm. From 1926, when science fiction was first defined as a distinct publishing category, until the late Fifties, sf was primarily a magazine literature. At first, the science fiction magazines were fashioned in imitation of Hugo Gernsback's popular science magazines. In the Thirties, sf magazines took on the appearance of the racy pulp story magazines of the day, a publishing form that died with the advent of television

The End of the Ghetto?

and the paperback book. Since the late Fifties, magazine fiction of all kinds has become rare, the emphasis of sf publishing has clearly shifted to the pb, and the few remaining sf magazines have been digest-sized pulps, remnants from another period, fossils confined to a tuckaway corner of the newsstand. New readers of science fiction, like students of ours at Cornell a few years ago, could feel that *Galaxy* and *Analog* and *Fantastic* and the like may safely be ignored, secure in the knowledge that anything in them worth the bother of reading would show up pretty soon as a paperback novel or in an anthology.

But there are special things possible in a magazine that are impossible in a book. A sense of continuity, of editorial direction, of community and mutual growth, of cumulation and common discovery. Books are sold to faceless consumers; magazines are continuing centers of attention for coherent audiences. Feedback is possible in magazines, and their regular publication schedules enforce on them a quality of being in the moment. This is valuable to sf, a literature that makes a conscious effort to reflect current best knowledge.

Without the magazine format of the early *Amazing*, which defined both the genre of science fiction and the community of science fiction readers, the present sf microcosm of fans, writers, editors and artists, of fanzines, conventions, awards and amateur and professional associations would never have existed. That is an historical fact. It is also safe to say that the Golden Age of *Unknown* and *Astounding* orchestrated by John Campbell in the early Forties would not have had the cumulative impact that it did without benefit of the special power of regularly-issued, time-reflective, specific audience-addressing magazine publication.

The power and virtue of magazine publication of sf continues to cast a spell. In the last year, we have seen no less than four new American sf magazines—*Galileo*, *Cosmos*, *Unearth* and *Isaac Asimov's Science Fiction Magazine*. Only the last of these has been cast in the old familiar digest-sized, scaled-down-pulp, format we are used to. The other magazines have been experiments, attempts to present sf magazines in new and contemporary form.

The visible limitations of these new magazines, however, seem to be the result of initial undercapitalization. At best, the new magazines hope to equal

the pay scale and other finances of the old lame fossil sf magazines. At worst, they can offer less than the resources of the magazines they hope to supersede.

One is led to wonder... If, say, a magazine were to be launched with the verve and power and contemporary feel of a *Crawdaddy*, a *High Times*, a *Heavy Metal*, with graphics as advanced as those to be found on contemporary record jackets, with money to pay two times or five times the rates of *Analog*—could a magazine like that achieve 500,000 or 1,000,000 circulation? Does the whole basic conception of what is proper or possible in sf magazine publishing stand ready to be revolutionized?

The possibility of a magazine like this, even as a talking point, a mere hypothesis, is new. When we traveled to New York recently to collect fact, opinion and rumor about science fiction, we were told that *Penthouse* had seriously considered launching a new-form, new-scale sf magazine earlier this year. The gamble offers itself. A risk. A leap into the unknown. It seems inevitable that someone will like the odds well enough to try to discover whether a large audience for a dynamic contemporary sf magazine can be gathered.

What would be the effect of the focused attention of an sf magazine audience one million strong? It is almost frightening to think about—but we may yet find out.

A third area of change in science fiction is its growing social respectability. In former times, sf was clearly disreputable. It was associated with Buck Rogers and Flash Gordon, with pulp magazines and paperback books, with uncouth engineers with wild hair and muddy boots. It was not the sort of thing that normal, sane, well-adjusted, well-educated people had to be concerned with. Occasionally, a radical young intellectual, the sort of fellow who toyed with Marx, jazz and thoughts of writing the great American novel, would catch a faint glimmering of some of science fiction's potential power and issue a manifesto: "Hey, those science fiction writers are a bunch of dumb geeks who don't know the treasure they have in their hands. We geniuses should thank them very much and take science fiction away from them." (In case you are interested, we are thinking specifically of an essay by Seymour Krim that appeared in *Commonweal* in 1953.) A small, backhanded sort of

recognition, that, but to be savored, especially since sf never was and never could be taken over from outside by usurpers. To write science fiction successfully, one cannot be an outsider, a slummer. No. To write science fiction, you have to *know* science fiction.

Science fiction could never be truly respectable until it was accepted for itself, as it is. SF cannot be cleaned up, cosmeticized, simplified, bastardized, ripped-off or naturalized and remain its true self. And twenty-five years ago, nobody gave a damn about pure quill sf. Libraries excluded it. Many science fiction classics saw publication only in paperback or fan press editions that were deemed unworthy of admission to most libraries. Academics ignored science fiction.

Oh, but today how different things are! In these Seventies, there are at least four major series designed to resurrect long-forgotten antecedents of science fiction and to give classic science fiction paperbacks and serial novels the respectable surround of critically-introduced hardcover editions—books deliberately aimed at libraries and schools. SF is taught everywhere, in high schools and in colleges. There are academic journals devoted to science fiction, and academic studies of science fiction. Art books are published collecting old pulp sf covers and illustrations—and, as a direct result, Frank R. Paul covers for *Science Wonder Stories* are consciously imitated in art published in *Rolling Stone*. Reference works on science fiction from thoroughly respectable sources like *The New York Times* and R.R. Bowker are common. And perfectly sober publishers like John Day issue strange special books like Damon Knight's recent historical memoir devoted to the late Thirties and early Forties New York science fiction fan group, the Futurians (who, as proof that commitment to science fiction is indeed necessary to those who write and edit it, included Frederik Pohl, Donald Wollheim, Cyril Kornbluth, Isaac Asimov, Judith Merril, Robert Lowndes, Richard Wilson, James Blish and Knight himself).

Where does scholarship end and nostalgia begin? What is intriguing is that with many of these critical and historical publications it is almost impossible to draw the line. It is as though secret young readers of science fiction from twenty-five years ago had grown up into positions where they might certify and attest to the accept-

ability of science fiction and seek to remind others like them of what science fiction was like. Repeat that. What science fiction was like. For all of this work looks backward. It has about it the odor of an end-of-an-era summation, as though all of modern science fiction's past, from Gernsback in 1926 through the death of John Campbell in 1971, was a thing safely dead, that might be hashed, sliced, dissected, analyzed and arranged with total impunity. No longer an unfathomable ongoingness; rather, a body of work produced in a former time that now can be seen whole. The appearance of encyclopedias of science fiction seems an irrefutable sign of this. Encyclopedias are graveyards.

Social respectability for long disreputable science fiction at exactly the moment when the era of science fiction in the Gernsback-Campbell mode has come to an end. What does it mean? What does it portend?

Difficult to say, but here is a possibility to chew upon. Seymour Krim and Frederik Pohl were born near the beginning of the Twenties in New York. Many of their experiences and orientations were similar. But Pohl imprinted on science fiction when he was young, and grew up to agent it, and edit it and write it. Krim only encountered science fiction much later, envied its energy, perceived its mythic significance, and at least for a moment entertained the thought of seizing it. But could not, as he was an outsider—foreign to science fiction. He simply did not know enough to write science fiction. But the effect of all this present-day publication of sf history, criticism, bibliography, art, reference, memoirs, classics and what-not must surely be that what was once the special property of a favored few, like Pohl and the Futurians, has now emerged as public history, public culture. Anybody who wants to now can identify with the struggles of the Futurians, groove on Virgil Finlay illustrations, read Delany in the public library and study Heinlein and Bradbury in school. In short, it seems possible that everybody ten years from now, as a matter of course, may assume that science fiction's past is not something alien, but *their* past. There may be no more Frederik Pohls and Seymour Krims, no more insiders who know and outsiders who yearn. *Everybody* may be an insider. Anybody who reads then may be reading science fiction. Anybody who writes then may be writing science fiction.

Could this happen? The publications of today are that which can make a general acceptance of this sort possible. And it is a fact-in-becoming that children whose daily bread in the Sixties was *Star Trek* must surely be the readers and writers of the new sf of the Eighties. It is they, if anyone, who are the new audience prepared to love *Star Wars*, and the new audience that may be waiting to be gathered by the so-far-unborn contemporary, high-powered, high-financed sf magazine we were suggesting above.

The ferment in sf book publishing visible in the past few years—a fourth area of current change—may be confirmation of this. Since 1972, the number of sf book titles published annually has risen steadily and dramatically, from about 350 titles in a year to nearly a thousand in 1976. *Children of Dune*, the novel version of *Star Wars* and the Tolkeinesque fantasy *Sword of Shannara* have all been bestsellers. Publishers who formerly disdained science fiction are now not only issuing it, but advertising it as heavily or more heavily than their conventional product. Advances for three books by Arthur C. Clarke are reported as amounted to \$500,000; for a paperback reprint of a Joe Haldeman novel, a reported \$100,000; for a first novel by a young sf writer, \$30,000. This is heady stuff for sf writers long used to \$2,000 advances. Twenty years ago, it was said that there were only a half-dozen science fiction writers able to make a full-time living from their work. Today there must be many more than that—together with a good many sf writers not yet graduated from \$2,000 advances but still attempting to live as full-time writers.

Strange and new. So strange, indeed, was the prospect of staid old art book publishers issuing new profusely illustrated editions of *The Hobbit* for \$35 and of full-page ads for the latest Frank Herbert novel that *Galileo* phoned to ask us what was happening. We didn't know and couldn't say for certain, but as readers and writers of sf we were intrigued to find out.

In an effort to get a line on current fact and opinion, we made two recent journeys. First, we drove to East Lansing, Michigan for a combined Milford and Clarion Writers' Conference reunion celebrating twenty years of one and ten years of the other. The East Lansing area, home of Michigan State University, which has become a permanent location for the intensive Clarion

workshops for would-be sf writers, is seemingly a locus of science-fictionism. There is an active sf club at the university. The town boasts The Curious Bookshop which specializes in nostalgia items and science fiction. And no less than four science fiction writers (including one of your authors) and one science fiction illustrator (Ed Emsh) have been produced by the immediate area. Perhaps it's the water.

We circulated at the reunion, interrupting the on-going flurry of Moopshall tournaments, filling dead spots in conversation, in public and private asking our questions: What is happening in science fiction publishing? Is it temporary or permanent? Why all the big money floating around?

Algis Budrys, writer, editor and reviewer of science fiction and recent Clarion instructor for a week, gave one strange answer. The money, he said, is around now because the great corporate giants who control publishing find a tax advantage for themselves in strategic losses of humungous amounts of money. The writer and his work are a near-irrelevance to this process. Budrys's final advice, delivered emphatically to an audience of writers and would-be writers of sf, was, "Take the money and run."

Gordon Dickson, past Science Fiction Writers of America president and by reputation one of the science fiction world's shrewdest business-heads, gave a very different reading of the weather. He saw a permanent change in the fortunes of sf, an emergence from the pulp ghetto. He said, "The money and advertising now being spent on sf is no more than mainstream books have had all along. Science fiction is no longer considered sub-literature. It's the end of the ghetto, and we have to grow used to that."

Cosmic accident or fundamental change? We drove back to Pennsylvania from Michigan, paused overnight, and then traveled to New York to talk to editors and agents of science fiction in an effort to resolve the matter for ourselves.

But again, we found radical disagreement. A disagreement of interpretation, that is, after one universally acknowledged point of agreement: that science fiction book publishing is in a state of boom.

Donald Wollheim, who was a Futurian, a sometime writer of science fiction, who shaped and directed the science fiction program of Ace Books for

nearly twenty years, discovering the likes of Delany and LeGuin, and now publishes his own specialty line of science fiction paperbacks, DAW Books, takes a somewhat doubtful view of the situation. He has lived through many cycles of boom and bust in science fiction publishing and sees the current situation as not fundamentally different from what has come before. "Something is very strange, and the question is, is somebody wrong? The sf market is in a ghastly, overinflated situation."

Wollheim perceives the present boom as due to the ignorance of raw young editors leaping into science fiction publishing with no real knowledge or experience of the true sales of science fiction books. His own experience shows that the print order of science fiction paperbacks is among the lowest of all genres, lower than that of gothics, for instance. "Wholesalers have not increased their orders. Even an advance of \$25,000 would not be profitable for me. Publishers will see how narrow the margin of profit actually is, and in about two years there will be a disastrous bust."

Judy-Lynn del Rey of Ballantine/Del Rey Books agrees with Wollheim in seeing the current science fiction publishing boom as based on illusion. And, she feels, on literary pretensions that must inevitably be exposed when sales returns come in. She sees sf as properly being a form of pure entertainment, bought by a special audience of clearly limited size.

Newer and younger editors, however, perceive things somewhat differently. Many do agree that the present publishing situation in science fiction is fevered, but see this as less dangerous than do del Rey and Wollheim. They perceive a new, permanent and wider audience for sf and mean to capture it.

Nancy Neiman of Avon Books says, "SF is no longer beyond the pale. In the last three or four years, publishers have realized that there is money to be made in sf. Readers buy books in stacks, and more and more are reading it into their thirties and forties. The sf market continues to grow whatever the subtrends of the moment are."

Tom Dunne, editor at St. Martin's Press, an established hardcover publishing house that only recently has begun to issue sf books and had great success with novels like Haldeman's *The Forever War* and Pohl's *Gateway*, speaks in similar terms: "The advances

[Continued on page 22]

Alexei and Cory Panahin

The Galileo PRIZE

For the short-short story under 3000 words

The short story requires a greater concentration of talent and energy than any other form of fiction. This special story form is not only the foundation of Science Fiction, but a unique American contribution to literature (credited to Edgar Allan Poe and the tabloid publishers of the 1840's). The short-short story, under 3000 words, is an even more difficult and demanding form calling for a special synthesis of theme, plot, characterization and setting which, at its best, approaches poetry in concentrated impact.

GALILEO magazine would like to encourage this art form through an annual prize for the best work received for publication during any one year. All works of fiction under 3000 words received between January 1st and December 31st will be considered for both publication in GALILEO and the annual prize, to be awarded in spring of the following year.

We hope that, by offering a substantial amount in the form of prize money in addition to our regular rates, both new talent and those more established writers who would be more likely to spend their time on longer works, will be encouraged to submit work to GALILEO throughout the year. Frederick Brown, Isaac Asimov, and Ray Bradbury serve as the exemplars of the short-short story in Science Fiction, but "name" value will not be considered as each story is judged on its own merits.

First Prize: \$300, Second Prize: \$200; Third Prize: \$100.

All submissions must contain a self addressed, stamped envelope. Each must be completely original and previously unpublished. Manuscripts should be sent to:

GALILEO, 339 Newbury Street, Boston, MA 02115

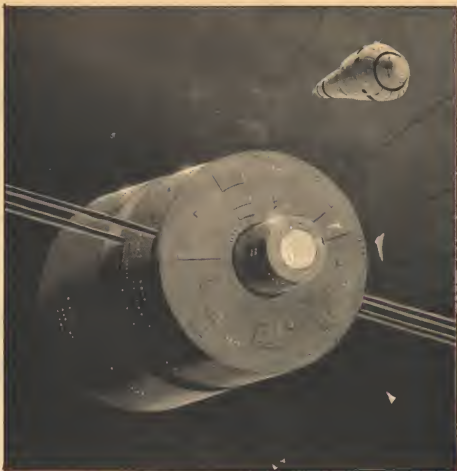
SSOAR: Part Two

The vehicle can be considered analogous to the small business jet.

(In the previous issue of Galileo, Earth/Space, Inc. explained how a single stage orbit and return [SSOAR] launch vehicle can be both more economical [no throw-away booster stages] and efficient [wingless design cuts drag and a plug nozzle uses different fuels for each portion of the flight] than vehicles presently planned by NASA. These applications will allow private enterprise to operate economical freighters to space. A launch facility centered on the earth's equator further allows savings by using the earth's rotation to maximize payloads and provide more continuous accessibility to launch windows. In this issue of Galileo, Earth/Space documents the fact that private exploration of space can return profits and that a privately-owned space colony can easily be an ongoing concern which pays for itself and then some.)

WHY GO into space? What can be done there better, cheaper or more efficiently than on Earth? Will investments in space exploration or colonization yield a profit, break even or operate at a loss?

To answer these questions we have to creatively examine the attributes of space, and explore how they may be put



to gainful use.

Attributes and Resources of Space

Though hardly exhaustive, the following list (giving attribute or condition obtaining in space, followed by its possible use) indicates areas where space colonies could find ample room for commercial exploitation:

Ultra-vacuum: Materials purification; vapor fabrication; reactive metal handling; magma fusion; thin film processing; large-scale high velocity processes; precise separation of materials.

Very low to zero gravity: Electrophoretic separation of biologicals; large single crystal growth; processing composites, foams, and other materials; fabrication and assembly of large, super-light structures.

High altitude: Communication, navigation, and traffic control aids; earth observations for resource detection, meteorology, and ocean surveying; energy and data relays.

Isolation from the biosphere of earth: Processing hazardous materials; precisely controlled composition materials; nuclear power production; storage of nuclear materials.

Undiminished insolation: Energy inten-

sive processes, including photovoltaic power generation.

Extreme cold [4° Kelvin]: Long term storage; superconducting magnets and processes.

Large three-dimensional volume: Material inventory; extremely large structures; three-dimensional architecture.

Radiation: Sterilization; chemical reactions.

Magnetic fields: Alignment of magnetic materials; separation of isotopes.

Extraterrestrial raw materials: Raw materials for all earth and space industrial processes.

The more specific realizations of some of these possibilities may be divided into two groups: those yielding profit in the earlier stages of exploitation, and those predicated upon a more extensive in-space experience.

Space Applications for Profit Near Term

- Reduce the cost of vaccines and biological manufacturing, and produce life-saving solutions not now available because of earth gravity constraints.

- Economically manufacture super materials for earth industry which will lead to high speed turbine blades which save energy

faster, more powerful, and cheaper computers
better quality optical lenses, optical fibers, and lasers
magnetic materials unparalleled in strength

extremely pure materials for research
•Produce a communications system which will allow direct person to person contact as via a wrist radio. This will not only free the user from static locations of phones, but will also reduce cost and increase user efficiencies through elimination of the middleman. Cost to a user should be the same, whether he talks with a person 20 miles distant, or 2000 miles distant.

•Produce an electronic mail-scan system, in which user terminals are located in the home—again to eliminate the middleman (Postal Service), and to eliminate time delays and lost letters. Privacy will be restored in the mails, and there will be same day (instantaneous) service. Corporations will be able to send memos, charts, and other notices instantly to their offices anywhere in the world.

•Produce unique shapes and forms in the weightless environment (such as thin-walled hollow ball bearings or large spheres, vacuum or gas-filled; ellipsoids of revolution; solid spheres for ball bearings and optical components.

•Blend high density particles in plastic matrices for use as nuclear and thermal
•Blend high density particles in plastic matrices for radiation shielding.

•Partially melt precompressed powders and compounds to produce isotope fuels.

•Disperse solid compounds and fibers in metal matrices to get high strength, complex fittings; high temperature structures; high strength brazing alloys; and cements.

•Inject gas into molten material in a controlled, pressurized environment to produce ultrathin membranes for sea water desalting.

•Control bubble distribution by inertia casting to produce bulk form materials for terrestrial expansion, varying density turbine blades, sonar transducer materials, and buoyant structures for ships.

These are but a few applications which may find profit in the very near term to the users of space.

Future Glamour Uses of SSoar

By designing a portal into the central tank, the interior of the tank can be used
EARTH/SPACE, Inc.

for crew workshops and living quarters in long-duration missions.

With very little modification, the basic SSoar can be used for a sub-orbital Earth/Earth transport system. The vehicle would be capable of transporting people and materials half-way around the world in less than an hour.

The vehicle can be modified for use as an orbit-to-orbit transfer vehicle, using in-space refueling. As an upper stage of a larger earth launch vehicle, the SSoar could be designed for re-entry from geo-synchronous orbit. This would allow placement, retrieval, and maintenance of geo-synchronous satellites. It would also allow direct claim of used satellites and stations in space for salvage purposes.

The vehicle can be considered analogous to the small business jet, and may be modified into a one- or two-person transport-to-orbit vehicle. In private hands, this could mean the same freedom for individuals to achieve orbit as they now have to fly private planes to distant points on earth.

The various cells of SSoar can be used as a multi-celled test bed in orbit, where large volumes or intra-system isolation are needed in orbit.

The service aspects of SSoar will allow many small users to ship artifacts, experiments, or other small packages on a ready basis. This comes from the simple packaging concepts used in SSoar, and the method of operation of the service.

SSoar may be used as an automated base from which to film TV and movie spectaculars and science fiction backdrops.

SSoar may be lease-purchased by universities or foundations, and used for research. The low cost allows this flexibility.

In satisfying the innate human desire to be first, SSoar will be able to set records as requested (and paid for), including: First live telecast of a rock concert in space; first daredevil/barnstormer in space; first anything you can imagine in space.

SSoar can tie in with commercial products in an advertising campaign (place a Bic pen on a footpad; strap a Timex watch to the outside of the nosecone; carry a Samsonite suitcase up and drop it on the way down).

All these and more can be possible—the only limitations being the unceasing inventiveness of man, and the eternal depths of space.

A Prophet Analysis

1980

First SSoar operational to low orbit on a regular basis. Continuous manufacturing service to orbit and back. Major space processing techniques refined. First batch of space-grown crystals for integrated computer circuits.

Assumptions: 5000 pound payload, 2 vehicles, \$100/pound to LEO, 1 earth base, 50 flights.

1981

Manned flights in SSoar. Point to point earth flight. Small low orbit manned station, using SSoar in orbit as a workshop. First electronic devices produced in space show up in commercial markets on earth.

Assumptions: 5000 pound capacity, man-rated, several earth bases, 5 vehicles, 200 flights.

1982

Multi-national tourist promotion: 6 hour trips in orbit. Feature length film made in space. Unmanned commercial circumlunar flight with return to earth. Begin construction of 50-man station at 400 miles. Major medical advances from space vaccine research.

Assumptions: 25,000 pound capacity, man-rated, 10 vehicles, 250 flights.

1983

50-man station completed. Tourist promotion begins. Manned production labs in operation. Radically new art forms produced in space for earth. In-space propulsion research begun. First electronic home-to-home mail service between major cities in the U.S.
Assumptions: 20 vehicles, 500 flights.

1984

Manned low-cost circumlunar flight using space impulse propulsion techniques developed in space. Unmanned commercial lunar landing of movable robot. Unmanned commercial landing and return of lunar samples for major mining company. Consortium formed to build large manufacturing colonies in low earth orbit.

1985

Manned circumlunar to earth flight, sponsored by commercial promotion venture, with TV and geological crew on board. Site selected for first manned lunar construction shack. Begin construction of 200-man station for workshops.

The Earth/Space Colony In Space

One of the greatest needs in
GALILEO 19



colonizing and industrializing space is to lower the cost of living in space. Lowering the cost of living will open the domain of space to many who are now economically blocked from space. Earth/Space has performed a study to determine the feasibility of living in space at a cost comparable to living on Earth. The Colony study emphasized low cost techniques and true economic payback, hence in some instances may seem unduly restrictive on the inhabitant. Yet if one takes the premise that the vast majority of individuals seeking a future in space will be more interested in getting to and living in space than in creature comforts once there, the study fills a need.

The Colony, sized to house 10,000 people, is spartan in design. But its low cost per inhabitant-space makes it economically attractive to many companies and individuals. Unlike other colony studies, the Earth/Space Colony is designed to bring profit to the owner of the Colony. While there will be ancillary services associated with the Colony, each part of the Colony should be able to return a profit on investment in and of its own right.

Under the given assumption, a person could rent a 10'x15'x20' room in the Colony for \$880/month. Other room options include purchase (\$109,292) and transient rates (\$96/day).

The Earth/Space Colony is designed to be economically self-sufficient in all respects. Each part of the Colony has a positive return on investment from charges for its own particular services. There are four major parts to the Colony: One-G Living Module; Low-G Services Module; Zero-G Industry Module; and the Power Module.

One-G Living Module

Living quarters are located in two pods, each roughly 200'x300'x500'. Each pod is a rounded trapezoidal solid. There is private space for 5000 people in each pod. The average room or inhabitant-space measures 10'x15'x20'. Fifty per cent of each pod is private space, fifty per cent is commons. Commons include walkways, parks, and open volume without decking. Private space is clustered in apartment-like modules, to give clusters of high-density dwelling modules alternating with blocks of open volume. There are five main decks in each dwelling pod.

The Living Module is devoted almost exclusively to habitation—hence the EARTH/SPACE, Inc.

primary source of income for this module is rent. However, anyone may purchase or rent one of the rooms and use it for any commercial purpose. It's anticipated that some of the rooms will be purchased outright; some will be rent/leased on a yearly basis; and some will be used as hotel rooms for transients.

The pods rotate around a central hub, and are connected to the hub by a series of high-tension cables. Inhabitants move to and from the Living Module by means of elevators or stairwells which are located in transfer tubes. There are two sets of elevator cabins, one for each Living Module. Each elevator shuttles between the Living Module and the Low-G Services Module. Travelling from one Living Module to the other requires a change of elevators. Each Living Module is about 1000 feet from the central hub.

The Living Modules rotate around the central hub at almost two revolutions per minute. This is sufficient to provide an approximation of one Earth gravity (G) in the living quarters. Utilities (such as power, water, and communications) are transferred to the Living Modules through conduits in the transfer tubes (which are 50 feet in diameter). While the transfer tubes are rigidly connected to the central hub and Low-G Services Module, the tubes are designed to compensate for stressing due to changes in mass in the outer modules.

The Cost of Living in Space

Exhibit 1

Colony Services Included in Rent of \$880/month:

- Private room space
- Public commons space
- Air and air conditioning
- Elevator passes
- Legal services
- Liability insurance
- Souvenir

Exhibit 2

Colony Services for Extra Charge:

Water	\$70/month
Food	\$50/week
Electricity	\$0.05/kw-hr
Internal communications	\$15/month
Colony/Earth communications	\$1/min.
Video-wall screen	\$30/month
	or \$1/day
Library	\$0.25 per film
	or microfiche rental
Education	\$5/hr
Nursery	\$5/hr

Recreation rooms	\$3/hr
Zero-G rooms	\$5/hr
Casino	free admission
Entertainment	as charged
Star Lounge (w/view)	\$5/drink
Medical	Professional fee
Legal	Professional fee
Maid service	\$200/month

Low-G Service Module

This module contains agricultural areas, lounges, recreational areas, medical areas, and shopping areas. There may also be research and production shops here. Each of the services set up in this module will pay its way through sale of services to the Colony inhabitants, or through sale of goods and services to Earth.

In addition to the shopping center nature of the Services Module, this module will also house the main utility transfer equipment, and will be the central location of communications and shipping operations.

The Low-G Services Module is connected to the Living Module by the transfer tubes, and to the Zero-G Industry Module by a central walkway through the hub. The Services Module is rigidly connected to the central hub, hence rotates with the hub at about two RPM. The closer one is to the central hub, though, the lower the gravitational effect caused by this rotation. At the hub itself, gravitational effect is essentially zero.

Primary docking port is located at the anterior end of the central hub. This docking port is designed to allow docking with any shape or size spacecraft, in pressurized or unpressurized conditions, without requiring that the ship rotate. Allowing spacecraft to dock without rotation provides quick docking with a minimum need for fine motor compensation. This mode also insures greater stability at the Colony/spacecraft interface. The docking port is a 50 foot diameter module which can be sealed or unsealed as required. It is isolated from the rest of the hub and Services Module by a series of airlocks. Under non-docking conditions, a set of motors in the hub counters the spin of the hub to produce an essentially zero-motion docking platform against which ships may dock. It's anticipated that, with a shipping rate of three flights per day, this port will be constantly in the docking mode.

Zero-G Industry Module

The most valuable resource in space is the weightless condition. The bulk of industry will therefore choose to locate in the Zero-G Industry Module. Goods produced in this module will be the primary source of Earth revenue for the Colony. The Industry Module will have over 100,000,000 cubic feet of volume, presumably sufficient for between 50 and 100 companies to do research and development, and to produce goods as needed.

The Zero-G Industry Module will not be rotating, but it will be connected to the rest of the Colony via a flexible passageway which gives free passage to the central hub, and maintains the shirt-sleeve environment of the hub. An arrangement similar to that used in the docking module assures that no rotational or other perturbing forces are induced into the module.

The relative position of the Industry Module to the rest of the Colony is maintained by a set of alignment plates. These alignment plates maintain proper spacing and angular alignment by a series of linear induction motors and cryogenic magnets which are computer controlled. This loosely coupled arrangement allows the Industry Module to remain stable, cushioned from minor Colony perturbations, yet retains primary alignment to the rest of the Colony.

All chambers in the Industry Module will have ready access to vacuum and the outer space environment, for research and processing purposes.

Power Module

Colony power—for residential, service, and industrial use—is supplied by a multi-megawatt solar-powered turbo-generator. The solar reflector is 2500 feet in diameter, and is constantly pointed towards the Sun. This means the Industry Module, Services Module, and Living Modules are constantly shaded from the Sun by the solar reflector. This eliminates problems of repeated thermal stressing as the Colony passes in and out of the Earth's shadow. Similarly, the reflector helps shield the living areas from solar radiation. (As further protection, most machinery and equipment are located on the Sun side of each module, to add extra shielding effect.)

Since the Colony is in low Earth orbit, it will alternately be in the Earth's

shade and sunlight roughly every hour. This will require a power storage device to average out the periods of power surplus and power deficit.

In order to support solar research activity in the Colony, a solar observatory will be positioned on the Sun side of the reflector, with access from the Industrial Module. When the Earth is between the Sun and the Colony, there must be a means of maintaining communications. Primary communications antennas will therefore be placed on the lip of the solar reflector, to allow constant line-of-sight between Earth and the Colony.

Some aspects of the design require further study: what is the best way to store energy for use while in the Earth's shadow? what is the best way to transfer power from the non-rotating Power Module to the rotating Services Module? what is the best way to negate perturbing forces, such as solar wind and atmospheric drag, in order to maintain long-duration orbital integrity?

And there are some disadvantages to a design such as this: living space is very restricted; the single rotating hub may make the Colony vulnerable to precession; the light weight of the Colony requires special materials for shielding against cosmic radiation.

But the advantages to the space pioneer and industrialist are very clear. The Earth/Space Colony can be afforded. Its near-state-of-art design means it can be realized in the very near future. And it requires no public financing, no political maneuvering to exist. The Earth/Space Colony has been designed for free enterprise in space.

This Colony plan is not rigidly fixed, and will likely change as the study continues. However, it does serve the purpose: to show that it is possible to design a Colony in space which is economically self-supporting in all facets of its operation, and which can be inhabited at a cost sufficiently low as to be accessible to large numbers of people on Earth.

—G—

PANSHIN

[Continued from page 17]

are higher because the audience is bigger. I see sf as being where the mystery novel was during the Twenties. Closet fans are coming out. People who read sf as kids and outgrew it are now returning. It's a matter of legitimacy, status, class and age. Publishers who

still stereotype sf as a literature for 12- to 15-year-olds are wrong. I was in Washington recently and discovered that Asimov's *Foundation* books are the in thing to read among senatorial assistants, committee aides and people like that."

So what is to be made of all this conflicting testimony? One point that emerged clearly as we talked to editors and agents was the degree to which their expectations and commitments determined the characterization of the facts we received.

Inevitably, our own hopes, expectations and prejudices must influence what we are able to see of this ongoing present moment of change in science fiction—and influence what we might conclude about it. The lean of our own thought throughout this essay should be apparent. We believe that all the instances of change we have named are related and part of a single phenomenon. It seems to us that a process of fundamental change is in progress, sweeping all of us along with it, believers and unbelievers alike. Change everywhere in the reception of sf, one point of change reinforcing the others so that very soon it will be undeniably apparent that Gordon Dickson is right, and the ghetto days of science fiction belong to yesterday.

That's what we believe, or would like to believe. But only time will tell.

At the very least, we can all afford to attend to a point made by Tom Dunne of St. Martin's Press: "When previous science fiction booms have ended, invariably they have left an sf audience that is significantly larger than when the boom began." And Donald Wollheim, noting that the increase in sf titles has not cut into the number of copies that individual sf titles sell, agrees that Dunne may have a point.

And at the most...well...When the two of us left the office of St. Martin's Press to catch a subway train, we seized seats and caught our breath. And then, looking around, we noticed that the middle-aged Chinese man to our right was lost in a book, moving his lips as he read—a paperback copy of Asimov's *Foundation and Empire*.

A random member of the new and larger sf audience revealing himself?

A Chinese spy doing his homework, trying to get a line on the inscrutable thought processes of the capitalist imperialist bureaucrats in Washington?

A sign of the times?

—G—

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YOU MAY CALL ME Roald Ruill," said the man from the future.

"And I'm usually called Amarga," added the (supposedly) female creature beside him.

Dan Casey nodded. He was too dazed and dumbfounded to do anything much, except nod. After all, when a pair of unbelievably tall, spidery, green-skinned, and, let's face it, gruesome characters wake you up out of a sound sleep, walk back and forth casually through your wall without bruising so much as a single rose on your landlady's wallpaper, all the time calling you "O, famous master of the Past," and "O, great Casey,"—all this is, to say the least, disturbing. It's disturbing even if you've been hitting the bottle hard and heavy; and Dan Casey, who was an unsuccessful illustrator for some unsuccessful magazines, hadn't drunk anything stronger than restaurant coffee. Not because he'd signed the pledge, but because he was—to put it mildly—broke. Broke, on his uppers, flat. The art editors yawned in his face and indicated where he could find the door on the way out. In fact, Casey had gone to bed that night with his eyes sore from staring at the want ads. He liked painting—but he also liked eating, and it was beginning to look as if he couldn't do both.

Granted, he hadn't gone to bed in any happy mood. A nightmare would have been fair enough. But waking up to delirium tremens—when he was cold sober—that was adding insult to injury!

So he only stared glumly at the green-skinned characters and mumbled, "So now you have names, yet. Pleased to meet you. Have a chair. Stay awhile. My name's Casey."

"Oh, we *know*," fluted the one called Amarga. Yes, on second glance she was undeniably female, and she might even have been called pretty—if you like your females eight feet tall, with green skin. Her hair was infinitesimally longer than that of Roald Ruill—if you could call it hair; it looked like feathers. A metallic band was wrapped around her skimpy breasts, and there was a most unusually decorated triangle painted on the front of the brief skin-tight bikini thing that covered her hips. Casey blinked, looked away from it and looked back again, wondering if it was really meant to represent what it looked like, or whether he was merely possessed of a spectacularly filthy mind.

"Oh, we know, we know," warbled Amarga again, regarding him soulfully, "you mustn't think us irreverent, Great Casey, if we intrude on your hours of dedicated creative contemplation!"

"Huh...hoo...hah...wha...what?" stammered Casey. "Uh...that's all right, Miss...er... Amarga, I wasn't, whatdyacallit, contemplating, I was just asleep."

Roald Ruill and Amarga exchanged bug-eyed glances of awe. "He actually *sleeps*," Amarga cooed, and Roald Ruill remarked, "Quite, quite. I had forgotten. The fatigue-center is vestigial in our race, of course, Great Casey." He glanced about. "May I sit down?"

"Why, ah, sure." For the first time since they had awakened him, Casey began to feel as if he were really awake and not having a humdinger of a cheese-sandwich nightmare. He began seriously to think of unwrapping the blanket around him and getting up; then he remembered his violently polka-dotted pajamas. Like most men, Casey considered pajamas effeminate and preferred to sleep in his suntan; but it was February, and the landlady was miserly with the coal and the blankets, so it had to be either his color-blind Aunt Jane's present from last Christmas or freezing to death.

He swung his feet over the edge of the bed, running a hand

Marion Zimmer Bradley

A GENUINE OLD MASTER

"And I'm called Amarga,"
added the (supposedly)
female creature beside him.



through dark, pillow-tangled hair.

"Look," he said, "to tell the sober truth, friend, I'm just now getting wide enough awake to know for sure what you've been saying. You told me you came from the future, or maybe I dreamed that. What goes?"

Amarga's whisper was clearly audible. "Roald, can he be what the records call a madgenius?"

Roald Ruill frowned. "No, no, my dear, you don't understand the physiological peculiarities of *homo neanderthalensis*—no, I believe it was almost *homo sapiens* by your time, was it not, O revered Casey? You must forgive my daughter, Great Casey; this is only her third or fourth journey into Time, and she has never been further from our own era than the Ninth Time Cycle, so of course she is still a little naive."

"Why, I went through the Ninth Martian transit-war," Amarga protested.

Roald Ruill sat down. More accurately, his elongated legs collapsed like accordions and he squatted on the rug. Amarga perched daintily on the edge of Casey's bureau. Her legs were so long that it was exactly the right height. The sight fascinated Casey. He blinked again. "Of course. From the future. Time travel. Buck Rogers and Martians and all. Ha ha." And suddenly he shuddered.

"Oooh, look," Amarga shrieked, "the inspired writhings of creative torment!"

And the green skin of the intruders from the future was positively suffused with robin's-egg blue.

Casey gulped. Pajamas or no pajamas, he'd face this on his feet. He planted his feet firmly on the worn linoleum, threw off the blanket, and stood up.

"Oooh," Amarga tweetled, and covered her face with long, dainty hands.

Casey, in a shocked glance, saw that the exquisite fingers were at least nine inches long. His artist's eyes saw an elegant, surrealist beauty in the elongated girlish form, but he turned to Roald Ruill.

"You say you're from the future. Okay, I'll buy that—I mean, I believe you, because you're surely not like anything I ever saw in the here and now. But would you mind telling me what you're doing in my bedroom, and why you keep calling me Great Casey?"

"Great Casey—" Roald Ruill began again, then his eyes swivelled, and he said gently "I am accustomed to the lewd customs of the past, Great Casey, but will you humor an old man's whims and make yourself decent? My daughter is young and naive, and your clothedness distresses her."

Casey gulped. Well, the pajamas were an eyesore, all right. He reached for his robe, and Amarga blinked rapidly, turned blue, and turned around with her back to him.

Roald Ruill's voice grew stern. "Even the whims of a barbarian genius cannot excuse this deliberate display of indecency before a young female," he thundered. "Great Casey, I implore you to remove from your limbs enough of that lewd and superfluous organic substance to spare my young daughter's modesty!"

"You mean, you want me to take off—"

"At least enough for decency," Roald Ruill commanded, and Casey shook his head. Oh, well, if this was a dream, it was a lulu, and what did it matter anyway? He shrugged, hauled off his pajama shirt, paused, shrugged again and compromised by rolling up his pajama legs to the knees, feeling acutely self-conscious about his long shanks. Amarga peered shyly at him again; even Roald Ruill looked relieved. "Now you appear civilized," he commented, "not like an

animal covered with—" he blushed aquamarine again, "organic substance!"

"Okay, okay," Casey said wearily. "Now would you mind telling me what you're doing here in my bedroom?"

"Oh!" Roald Ruill looked startled, "I presumed you had tele-empathized the reason for my presence. Well, we're on a little time-travelling jaunt to celebrate my daughter's two-hundred and fortieth Seasonal Festival. Yes, she's only a little chicken, but she knows what she wants," he added, with an air of paternal indulgence, "and nothing would suit Amarga but that she must have an Old Master to complete her collection. And then we had the great ideal!" He positively beamed with benevolence. "Antique paintings are so expensive, and so rare, I decided we would travel into the past, and—" he brought it out with a gurgle, "have the child's portrait actually painted by the greatest of all the Old Masters! Hence, Great Casey, we are here!"

"Golly," said Casey. It sounded inadequate.

And then he said, "Who, me?"

And then he said, "Holy smokes! Me, an Old Master?" Slowly, Roald Ruill's words seeped in. He, Dan Webster Casey, in some still-inconceivable future, was revered as a great painter—and judging by the way they were bowing and scraping, an Old Master!

BUT WHAT AN IDEA! To collect art objects in Time! To commission a chair from Duncan Phyfe's workshop, to watch Leonardo brushing in the incomparable smile of Mona Lisa, to watch the chips fall in the studio of Phidias!

He swallowed. "Sure," he said, "I'll paint her portrait. But—are you sure you mean me? I'm no great painter! You mean that in your time, I'm—an Old Master?"

"You mean that you are not yet successful?" Roald Ruill asked in amazement. "Amarga, imagine it! We have the incredible fortune of acquiring a portrait by the Casey of the Eternity Fragment! From a time when he was a mere unrecognized genius!" He paused. "Can it be true, Great Casey, that the multitudes do not yet revere your gift?"

"They sure don't," Casey muttered, "I don't know where I'll get my next week's rent money!"

Roald Ruill said, "I tele-empathize that you refer to negotiable credits. Would a few pounds of—oh, gold, or uranium, or platinum, help you any?"

"Would they!"

"Well, we will reimburse you generously," Roald Ruill beamed. "When can you begin Amarga's portrait?" His accorioned legs zoomed to full height. "We have mastered Time to some extent, Great Casey, but we are still somewhat limited in duration within your continuum. You accept?"

"Why—sure."

Amarga murmured, "Is that your studio I see through the wall? Oh, how exciting! The studio of Great Casey! Can I see it?"

"Be my guest," Casey said expansively.

Amarga squealed and grabbed Casey's hand. "Let's see it now!"

Roald Ruill faded bodilessly through the wall. Amarga sailed after him, dragging Casey by the hand, headlong. She floated through the wallpaper, and Casey, cracking his head against the molding, picked himself up, half-stunned.

Amarga thrust her head back through the wall; Casey, looking up through spinning stars, shivered at the effect of her long pale-green neck protruding through the wallpaper.

"What's the matter?" Amarga fretted, "I thought you said we could come in here!"

Casey shook his head, groggily. "I can't walk through walls," he said, exasperated, and disregarded Amarga's tweetles of dismay and curiosity, striding to the connecting door and flinging it open. He surprised Roald Ruill light-heartedly forcing a fine sable brush into the neck of a tube of cadmium yellow. "Don't do that," Casey snapped. "How do you do that walking-through-walls trick?" After he said it, he reflected that if they could take short-cuts through a few thousands of years, then walking through a wall was no trick at all.

"You mean you can't even *rearrange* your atoms?" Amarga squeaked.

Roald Ruill put down the ruined brush. "Never mind that now. You will paint my daughter?"

"Of course," Casey said. "But am I—on the level? Am I honestly a famous painter in your era?"

"The Greatest," intoned Roald Ruill solemnly. "We have a mere half-dozen names from all of pre-space art, and yours is among them. You are, I believe, roughly a contemporary of Michelangelo? Is he a friend of yours? Your pupil, perhaps?"

"Hardly," Casey said wryly. Maybe four hundred years was merely a flash in the pan to these people. Then he asked, curiously, "Which of my paintings survived—you said, fourteen thousand years?"

"More or less," Roald Ruill admitted. "As a matter of fact, Great Casey, no single painting has survived. But the mere fact that your name has been handed down across the ages indicates your unique greatness. In our greatest museum, on Mars, is preserved what's called the Eternity Fragment—generally conceded to be of Earth-origin—containing a brief critical description of your painting."

Casey was suffused with awe. He would, then, outlast Picasso, Renoir, Gainsborough, Rubens? A hint of humility made him wonder if his name would be preserved, maybe, by mere chance—how do we know how many great Greeks and Romans wrote or painted only to have their works perish in the rubble of the Dark Ages?

But the pride and the humility vanished together when he got out a stick of charcoal and fixed a sheet of rough paper on the easel. "Let me make a rough preliminary sketch now. Yes, that's fine, Miss—Amarga. Now—" if she was in that position, the obscene thigh-patch didn't show. He sketched swiftly, drawing with long, easy strokes. It was ridiculously easy to get a likeness; the danger would be that he'd turn it into caricature.

Amarga gurgled, "Oooh, I'm excited—"

Roald Ruill was strolling around the room, examining a few of Casey's sketches and paintings. "Fantastic, of course," he remarked, pausing before a few fashion sketches Casey had done for a newspaper assignment that hadn't quite come off, "Such incredibly strange people, and their—er—" again the aquamarine blush, "attitude to clothedness. I—hem—like this very much—"

Amarga said, in an embarrassed warble, "Father, you may not indulge your taste for pornography!"

"T-t-t," reproved Roald Ruill, "the Universality of Art, my dear—the Universality of Art! And, now, I fear, we must be going. If convenient, Great Casey, may we return tomorrow for a sitting?"

"Sure, sure," Casey could joke about it by now. "Don't get mixed up and come yesterday by mistake."

"Amarga is so fond of having her portrait painted," Roald

"You are, I believe, roughly a contemporary of Michelangelo? Is he a friend of yours? Your pupil, perhaps?"

Ruill said fondly. "We have twelve contemporary interpretations, each by a different modern artist. In the most recent, by my friend Cloass Clenture, she is portrayed as a winged lamia, with all her erotic fantasies flying around her head. And Tarnby Torris did an impression of her in carved soapstone, with fourteen eyes and two heads to imply that she is twice as beautiful and seven times as foresighted. Are you a pre-cubist or a neo-surrealist, Great Casey?"

Casey was busy sketching and, in his preoccupation, hardly heard what Roald Ruill said. (He was to wish, later, that he had listened more carefully.) As it was, Casey only snapped out of his concentrated effort when Roald Ruill said, "We must go now," and added, "I tele-empathize that you are pressed for credit. I love to help struggling young artists, even when—" he squeaked laughter, "they are famous Old Masters. It's like having a part in the cultural history of the Ages. I should like to buy one of your paintings." He picked up one of the illustrations, a woman swathed in a luxurious fur coat.

"Roald!" said Amarga, embarrassed reproach in her eyes, "we must surely have an original Casey, but let's have one we can display with pride to our friends!"

"Come, you mustn't be narrow-minded," Roald Ruill rebuked, but he put aside the offending picture. Casey busied himself with fixative, struggling against a howl of laughter. Then, halfway between a real desire to be helpful, and a wicked longing to help the joke along, he hauled out a couple of pin-up nudes he had done a few months ago, advance sketches for a prospective calendar. They had been turned down because the client considered their bikini suits too skimpy even for pin-ups.

"There!" Amarga said with relief.

"Can't I buy the other too, my dear? Just to show to, er, my own friends?"

"What would my maternal parent have thought?" nagged Amarga, and Roald Ruill sighed. "Well, well, my dear, if you think—will this be sufficient remuneration, O Great Casey?" With an air of negligent confidence, he stuck one hand out into empty air, twiddled his long, skinny fingers in a weaving pattern. Something, a few grains of yellow dust, began to shine in his palm, then tumbled swiftly upward into a small pile. After a little, it began to weigh his hand down, and Roald Ruill snapped his fingers, then yawned. "Gold. I see you haven't a lead-purse for the standard uranium coinage."

He dumped the gold on a spare palette. "We will return tomorrow for a sitting," he said. "Come along, Amarga."

They walked casually through an outside wall and were gone, leaving Casey staring at a little heap of yellow dust—and his half-finished charcoal sketch of an eight-foot, feathery-headed, green-skinned girl.



IT'S GOLD, ALL RIGHT, the jeweler said, "and very fine quality—looks like filings from a goldsmith's shop. Would you mind telling me where you got it?"

"I didn't steal it, if that's what you mean," Casey said, then improvised on the truth; he always went by the idea that if the unadorned truth wouldn't do, half a truth was safer than a lie. "A queer old duck wanted to buy one of my pictures, and he asked if I'd take this for it. It looked like gold, so I took the chance."

The jeweler thought for a minute. "All right, I'll take one too," he said. "Fifty-five dollars for what's here, if you'll give me the name of someone who knows you and can vouch for your character."

"Sure." Casey gave him the name of Chad Stanton, managing editor of a chain of pulp magazines to which Casey sometimes sold illustrations. The jeweler took the gold away, and somewhere in the back of the shop, Casey heard a number being dialled. In a few minutes, the man came back and counted out the money.

Freed of worry about next week's rent, Casey enjoyed a decent meal, for a change, in a decent restaurant. He was halfway through a steak when he looked up and saw Chad Stanton coming in the door. The editor crossed the room to Casey's side, took a seat across from him.

"Thought I might find you here," he said. "Did you know you're a suspicious character? Whose watch did you hock today? Somebody called up and asked did I know you, and were you a solid citizen. So you owe me a drink on that."

"Sure, I'm loaded," Casey said, "only weren't you with a party?"

Chad Stanton chuckled. "Just the office crowd," he said, "and I'm better off over here, where I don't have to listen. We're bringing out a new title, next month—science fiction monthly—and the fellows will do their planning better when I'm not there to say no. How about that drink?"

Casey ordered it. He had to break a twenty, and Chad Stanton, used to his friend's near-empty wallet, whistled rudely. "Not whose watch did you hock, but whose bank did you rob?"

"None," Casey said. "But it's a funny business, just the same. I'd like to tell you about it. Want to drop up to my room?"

"I can't make a night of it," Stanton warned, "not even if you have a bottle of Haig and Haig. I've got a foot-deep slush

pile to read for that science fiction magazine."

"And I've got a... a client coming to sit for a portrait," Casey said, "but stop in for a few minutes on your way home, will you?"

"Can do," Stanton said. At five that afternoon he knocked at the hall door of Casey's bedroom. Casey brought him into the studio.

"It was about two-thirty in the morning," he began, and told the whole story. Stanton blinked.

"If I read it in the slush pile, I'd laugh my head off," he scoffed. "What had you been drinking?"

"A glass of cold milk," Casey said in annoyance.

"Then you ought to stick to beer."

"Look, Chad, I'm serious. If not—if I'm crazy—where did the gold come from?"

Stanton squinted at the few shining grains still adhering to the palette. His comment was profane and unprintable. "Yes, it looks like gold all right."

"And look here," Casey urged, handing him the sketch of Amarga. Stanton whistled, turning the sketch in his hands.

"Oh, brother," he said, "if that stable of dry-brush pushers we've got down there could see this! This is science fiction art—the real stuff! This is a Bug-Eyed Monster to end all BEMS! I never knew you could do fantasy art, Casey."

"I can't. I tell you, this was a life sketch," Casey said. "I don't even read that crazy science fiction stuff."

"Maybe you ought to take up writing it, judging by that yarn you spun," Stanton snorted. "Look, seriously, Casey—I don't handle the artwork over at the shop, but you work up that sketch into a painting, and show it to Donaldson, over at Vector Pubs. Tell him I said to think about featuring it for a cover, and we'll assign somebody to write a story around it."

"But Chad—" Casey began, then stopped at the sight of the other man's face; Stanton's mouth was open in a long O, his eyes bugged out, and he was staring fixedly at something just behind Casey. "Now I'm seeing it," he yipped. "I must have been reading too much slush—gotta catch my train—gotta take a rest—" he gabbled, shut his eyes hard, turned and piled pell-mell down the stairs. Casey turned slowly around, not in a hurry to see what he knew Stanton had seen: Roald Ruill's feathery green skull, sticking out of the wallpaper.

"Come right in," Casey said bitterly. He'd better keep the man from the future in a good humor; he was going to need whatever fee he got for Amarga's portrait. Chances were, he wouldn't sell anything more to Stanton after this!



IT HAD TAKEN A WEEK; Amarga had come for three more sittings, and now the painting was finished. They were to come for it tonight.

Casey liked it, weird as it was. Amarga had a special beauty; not a human beauty, of course, but you couldn't have everything.

If only they liked it! Neither of them had looked at the sketch; Roald Ruill had twittered something kind about not being worthy to watch the incubation process of the creative mind, and Amarga had told him, in her skirling coloratura, that she simply adored surprises.

It was a perfect likeness. Amarga stood, as if living, on the canvas before him. Casey felt that one minute of pure, perfect self-satisfaction, the aftermath of all the painful sweats which go into making anything, whether a picture or a picrust. Casey looked at his picture and saw that it was good, the best thing he'd ever painted. He'd have to give it up soon enough,

so right now he meant to sit and admire it for a minute or two.

The materialization process no longer scared him. When Amarga and Roald Ruill walked out of the wall, he merely greeted them with a cordial grin.

"This is a great moment in history—in *future* history," Roald Ruill said pompously, "Amarga, my dear, you must have first look at the portrait."

Casey stood back, giving way to Amarga. Roald Ruill edged behind her.

They looked at the picture for some moments in silence. Roald Ruill paled to a minty shade of palest green; then suddenly his face congested to indigo, and Amarga gave a soprano shriek. "Oh!" she cried. "Oh, it's *horrible*!"

She flung up her long spidery fingers to her eyes and vanished.

"You don't like it?" Casey asked numbly, and from nowhere, her bodiless voice wailed, "Like it!"

Roald Ruill came at him, angrily. "Is it your intention, Casey, to mock the generations who have revered your name? To insult my daughter?"

Casey stared, stunned, at the almost-breathing picture of Amarga. "Insult her?" he faltered, "nothing could be further from my mind! I did the best—"

"You have painted her as *inhuman*!" Ruill thundered.

"Well," Casey stammered, "Well, she doesn't look... exactly like the... human women I've painted, but I painted her as she is, as beautifully as—"

Roald Ruill's face went through a whole palette of greens and blues. "Would you flaunt our mutations in our faces?" he demanded. "How would you paint any woman of Earth, as other than human? Why, you wretched scrawler, if I wanted to see Amarga as she is, I would look in a *mirror*!" He spoke it as one speaks a disgustingly filthy epithet. "As if anyone ever painted what he saw! Have you no artistic sense of interpretation? You painted only her form—and painted it indecently—and with no psychological insight whatsoever! Where is her basic humanity? Where are her thoughts? Where are the beautiful telepathic projections of her innocent soul? This... this obscene scrawl—"

Casey tried to check the flow of rapid words.

"Look here, Roald Ruill, I didn't think—in our era, it's customary to paint a portrait so it looks like the subject—"

"Ridiculous!" Roald Ruill stabbed with an angry long finger at the pin-up nudes on the wall. "Do you look like *that*?"

"Well, no, but then, you see—"

"And that proves it," Roald Ruill said triumphantly. "I don't know why I stand arguing with an ignorant moron of the pre-space era! One school of criticism has always maintained that pre-space man had no creativity, and that his so-called *art* is on a level with the scrawls of a child. Now I have evidence to support this theory! You say, Casey—" he omitted the "Great" this time "—that you painted Amarga as you saw her? Then where are her sexual attributes? Why, one would never know whether she was male or female! You might at least have followed the ordinary conventions of decency! As for this... this—" he went an incoherent purple, touching with angry, trembling fingers the painted feathery topknot on Amarga's skull, "even after what we said about the... the lewd indecency of organic substance on the body, you had the... the effrontery to paint her—" his face ran the whole gamut of colors, green ice to pine-cone, "with *hair*, and wearing... wearing *clothing*!"

Casey was angry now. "Well, she was wearing clothing."

he flung at Roald Ruill. Damn it, how could he have known about their dim-witted conventions?

Roald Ruill snorted, "Some concessions to the climate must be made—but sane and decent people do not mention them in polite society!" He flung the painting to the floor. "This... this daub would be of interest only to the Council on Abnormal Psychology! Believe me, when I get back to my own time, I will explode the whole Casey myth! The so-called Eternity Fragment which calls you the greatest, must be a hoax!"

Roald Ruill was gone, like a whisper of air, and Casey swore fervently, seeing his fee and a week's work going glimmering. The room was empty; Casey wondered if he were sleepwalking, if the whole thing had been a bizarre nightmare. No, for Amarga's portrait lay at his feet where Roald Ruill had thrown it. Casey raised his foot, ready to stamp through the useless, stupid, cheating face; then he jerked back his foot, so suddenly that he almost fell. He steadied himself on the easel, stooped, and tenderly picked up the portrait. He hunted up a piece of brown wrapping paper and a string, and twenty minutes later, went out into the street. The editorial offices of Vector Publications didn't close till six. He could just about make it.

And everybody in the science fiction world knows the rest—the gorgeous six-color cover on the first issue of *Eternity Science Fiction Novels*, the story written around the cover by Theodore Sturgeon, the guest editorial on "The Nonhuman in Science Fiction Art." The original painting, auctioned off at the science fiction convention, sold for two hundred dollars.

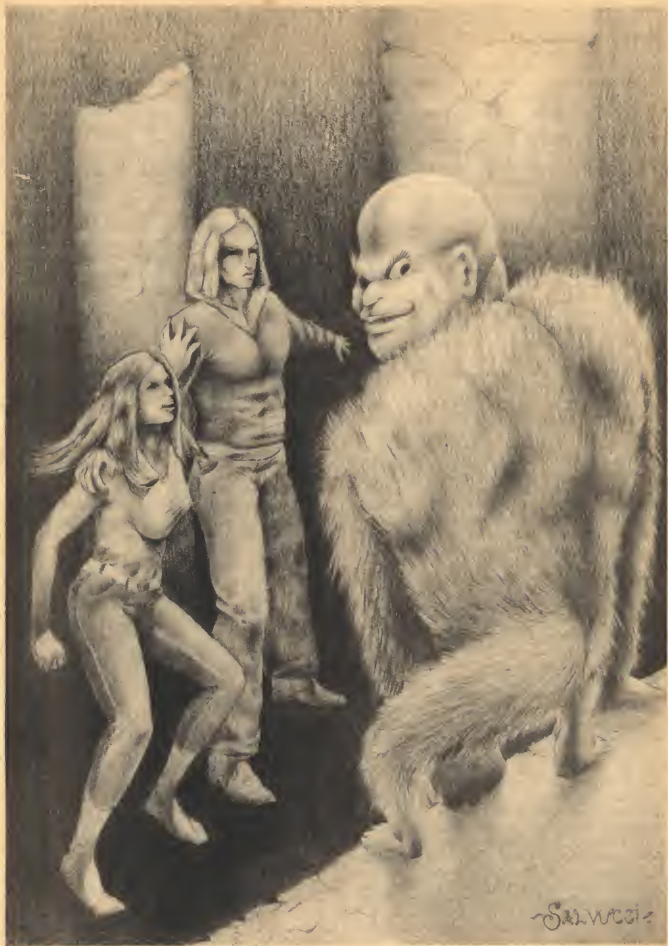
No other of Casey's paintings ever won quite so much fame, though he sold steadily to the science fiction magazines after that, and twice won a Hugo as "Artist of the Year."

He was fairly well-satisfied with his modest success, though his family always wondered why he should waste his talents illustrating "escapist rubbish." His nagging maiden aunt (she of the orange polka-dotted pajamas) once asked him point-blank:

"Why don't you paint something worth while, something to make a name for yourself? This here-today-and-gone-tomorrow stuff, it's only good for waste paper! These crackpot science fiction fans may call you the greatest, but fifty years from now, none of these cheap magazines will be around—and your name will be completely forgotten!"

"Hah," said Casey—but only to himself, for he was almost always polite to old ladies, "that's what you think!"

—G—



Richard Salvucci

Jack Williamson

SLAVE TO CHAOS

They had fled the reservation, defied the church, and killed their human pursuer: three sins Belthar would not forgive. For each offense, the penalty was death.

Jack Williamson



ALEXANDR KEEPS HINTING that I ought to marry.

Marry him, he means, if he dared make it plain. His problem is too much awe of me, even though I have never let him know what I am.

He's no doubt the ablest human geneticist who ever lived. A superb technician, my indispensable assistant the past twenty years. An appealing creature, too, for all his limits. Muscular, massive, and almost stolid, yet so quick he has always beaten me at handball. At times, in fact, he might have taken me to bed.

The truth would appall him. He knows of course that we Smithwicks are Creators, but it would never occur to him to capitalize the word. He has respect enough for all our generations, for old Adam and his son Darwin, for my father and myself, but I have never let him guess that we ourselves are the first successful human genotypes, our own first creations, more significant to history than homo verus or homo mutatus or homo divinus.

The gulf has grown too wide. For all his native genius, the drive I admire and the emotion that moves me, he's still the raw human stuff, the unfinished work of random natural evolution. Still the victim of his unpurged animal inheritance. Still enslaved to the chaos that made him.

He wouldn't, couldn't, understand.

—Journal of Eva Smithwick

[Fragment found in the ruins of her laboratory on Creation Mesa]



THE NULL-G BELT lifted them strongly at first, out of the desert scents of dust and sage and death, and a west wind carried them up and away from the human deadeye lying lifeless on the rocky beach where she had trapped them, high into the noiseless night.

"They can't kill us now." Buglet turned in the belt, smiling in the moonlight, her body warm and strong against him. "We'll get there, Davey!"

"I hope so, Bug." He looked ahead, at the far wink and gleam of the city domes, rose and gold along the dark blur of hills far beyond the black water. "I hope—"

"We don't dare fail!" Snuggled against him in the belt's loose curve, she buried his nose in her fragrant hair. "We'll be trumen, safe with the passports San Seven made us. We'll worship in the chapels of Thar and Bel—and forget that we were ever premen."

"If—"

But he checked his protest, because she knew as well as he the power of the angered gods behind. They had fled the reservation, defied the church, and killed their human pursuer: three sins Belthar would not forgive. For each offense, the penalty was death.

Though she felt delightful in his arms, the hazards ahead refused to be ignored. The truman town was still far off, and they would be blundering strangers there even if they reached it, their passports poorly forged and the Thearchy always on their trail.

"Davey!" She twisted to kiss him lightly. "Don't brood. We're more than premen, I told you. We're Eva Smithwick's Fourth Creation. Made to master the gods."

"Our big problem." He grinned bleakly. "The gods don't want to be mastered."

"We are in danger," she murmured calmly in his ear. "But that's okay. I think we need danger. I think it's the trigger to release the genetic gifts we never knew we had. When we're in danger again, I think you'll find the means to

save us—the way you killed the deadeye.”

But he hadn't killed the muman—he shivered a little, at that cold sudden certainty. Buglet did possess unknown genetic talents. Her awakening memories of the last Creator were proof enough of that. But he was only a young and untaught preman, his own danger yielding nothing better than the sweaty chill and the bitter taste of fear.

When he tried to recall any part of his own in the killing of the muman, all he found was blankness. If some unfolding genetic power had really turned the muman's exploding bolt back against herself, the gift belonged to Buglet, not to him. But he didn't try to tell her that, for fear of spoiling this good moment in the air.

Not so lightly, she kissed him again. Weightless in the belt, rising toward the moon, he began to feel a freedom and a peace he had never known. The Redrock reservation was gone behind them, with all its filth and pain. This high, bright silence had become their own special world, where he felt no possible peril could touch them.

“Davey—” Her sudden whisper broke the spell. “Can you see the city now?”

He squirmed in the belt to search the dim horizon. All he could see at first was flat black water and milk-white sky. When at last he found the city domes, their faint wink was far south of where it should have been.

“The wind,” he muttered. “Changed, I'm afraid. Taking us north, back across the lake.” He felt alarm tighten her body. “We'll climb again,” he told her. “To look for a better wind.”

Twisting the lift-control knob, he heard a tiny squeal.

Warning, the buckle's rat-voice squeaked. Main power cell exhausted. Prepare for early descent on reserve cell.

“So we fall?” Her voice was calm, but he felt her trembling. “Back into the lake?”

“Perhaps—” He cut back the lift to save power. “Perhaps the wind will change again.”

But the wind had died. The lake became a dark uneven mirror, on which the moon made a long silver track. The distant domes of the truman town blurred and vanished. By moonset, their feet were dragging icy water. Long before dawn they were deeply awash, numb and shivering but still in the belt, kept afloat by its last few pounds of lift.

Sunlight showed them a gray lake horizon, pierced by a single tall spike of rock. They toiled toward it, still helped a little by the dying belt. Late in the morning they limped and splashed up the boulder-beach at the foot of a high sandstone cliff.

Davey snapped the power off. The dead belt fell to the rocks and they dropped beside it, utterly drained as it was. He lay watching Buglet as they let the sun warm them, the torn clothing molded to her body, the wet hair black and sleek against her hollowed face. A pang of love and pity stabbed him.

“We're fine, Davey. Fine!” She saw his look and tried to smile. “I think this kind of danger is exactly what we need.” He felt too numb and dull to respond at all.

“This will be... be the test.” Her yellow eyes looked heavy, and her voice had sunk to a whisper. “Our chance to prove—”

She was suddenly asleep.

Though he tried hard to keep alert, the sun was suddenly higher, hot in his face, and his whole body ached from the rocks where he had lain. He had been dreaming of a fall from the rim of Creation Mesa, back on the reservation, and for an

instant, staring at the red cliff above, he thought the dream had been real.

Buglet lay beside him, sleeping as quietly as if the boulders had been a null-G bed. He sat up painfully to look around. The sun stood at noon. Southward, where they had left the dead muman, he saw glints of metal moving in the sky.

Skimmers, already searching.

In a moment of panic, he groped for his knife and found it gone, lost somewhere in water or sky. His wet pockets were empty of anything useful. Pausing for a moment over Buglet, he saw her smiling in her sleep as if all their cares were gone. A throb of pain caught his throat, and he stumbled away to search for some weapon, some tool, some spark of hope.

The islet had been a sandstone butte before the new flood rose, tall walls towering from slopes of broken stone. His circuit of it took him half the afternoon, scrambling from boulder to slippery boulder, wading across sunken blades and pits, swimming when he had to. Buglet limped to meet him when he came back.

“Davey! Where have you been?”

“Looking for anything.” He sat wearily on a wet stone bench and shaded his eyes to squint at the skimmers weaving back and forth across the southward sky. “Driftwood for a raft. A fish I could catch or a bird I might trap. A path we could climb to the top. Even a stick I could use for a club.”

He spread his empty hands.

“You frightened me.” Her tawny eyes turned almost black. “Leaving me alone. Of course I'm hungry—but hunger is part of the danger we need. Nothing can help us, Davey, unless we find ourselves. We must look inside, for the talents the Creators gave us.”

“Gave you.” With a weary shrug, he moved for her to sit beside him on the rock. “Not me, Bug.”

“You, too, Davey. I saw you reflect that fireball to kill the deadeye. Even if you don't remember—”

“I think it's you who can't remember.”

“Try, Davey. Try!” She leaned to look into his eyes. “I know you're desperate, but being desperate can help.”

“Sorry, Bug. I don't know how to try.”

“Just think back,” she said. “Think back to the first things you can.”

Her lean face was pink from sunburn and scratched from a fall, the red mark beaded with black drops of dried blood, but she was beautiful still. He did want the powers, the heritage that would put him in her special race, her equal and lover forever. If desperation could help...

“I remember when we were small.” Trying hard, he looked beyond her into the brassy sky. “The time when the goddess came down to visit the reservation. When the halfgod Qelf made the deadeye kill our dog Spot because he ran a rat into the sacred procession.”

“A fine day for us.” He liked the joy in her voice. “Because the goddess was generous to us. But that's not what I mean. You must think farther back.”

Frowning at the skimmers in the south, he tried again.

“My mother was a girl at La China's—that's what I first remember. I guess she was trying to care for me, but I didn't know it. She used to sleep all day. Sometimes at night she locked me in a hot little attic room over the bar. The lock was broken, and I learned to get out. I wanted to see what she did with the men.”

He grinned at Buglet, his sunburnt lips cracked and painful.

"Most of them were friendly enough, if they noticed me at all, but there was a sheriff I hated. A fat, short, black, hairy man they called El Corto. He always smelled like mescal, and he never left money for my mother. Sometimes he cursed her. Once, when he was drunk, he stabbed her—"

A shudder stopped him.

"No!" He shook his head, staring at Buglet. "I don't know why I thought that. But I did hate El Corto. Once he gave me too much mescal, and laughed at me when I fell down in my own vomit. When I was old enough—three maybe—I tried to get even. I had forgotten all of that."

He caught a rasping breath.

"Now it comes back," he whispered. "The morning I slipped into the bedroom—I was hungry and looking for something to eat. I found them asleep in bed together. The reek of mescal made me sick again. Crazy, I guess."

"El Corto's gun belt was hung with his clothes on the back of a chair. I tried to shoot him, but the gun was too heavy, and I didn't know how. When I tried to pull the trigger, it only made a click. He woke up and cursed and knocked the gun out of my hand."

"It went off when it struck the floor. The bullet tore my mother's face—that's what made the scar." He shivered. "I remember my head ringing from the crash, El Corto slapping me across the room, and my mother screaming that I was a little demon."

"Maybe I was." He shuddered again. "I hadn't meant to hurt her, but that scar was ragged and purple and awful. El Corto never came back, I guess nobody did. One night I heard her drunk and screaming at La China. Next morning she was gone." He gulped at the ache in his throat. "I... I never saw her again."

"Don't blame yourself." Buglet bent to touch his hand. "I hadn't guessed—that must have been before you found me." For a moment she was silent. "But you'll have to look deeper." Her voice turned urgent. "Look for what the Creators gave us. Look for the latent memories of things before we were born."

"Sorry, Bug." He shook his head. "I have none."

"I do. So do you, if you can only find them." She leaned closer. "Mine were dim as dreams at first, but now they're real. Real as yesterday. I remember why we were made—to end the misrule of the gods. I remember why we were shaped to look like premen—to protect us from the gods. I remember why our time to wake has come—because, with the gods shipping the last of them away to die on Andoranda V, all the premen are in danger."

"Davey, you've just got to think back."

"I wish... wish I could." His eyes fell back from hers, almost with guilt. "But I don't know how. It doesn't seem... natural."

"But it is." Her eyes went suddenly wider, and her voice seemed deeper when she went on. "This just came to me. Memory is often innate, Davey. Most living things inherit all they need to know. Spiders spin their webs without being taught, beavers build their dams. We're the beings born blank, needing to learn everything. Actually, that blankness was a big evolutionary step, because it kept us individually flexible, able to adapt to new situations. But ancestral memory is an old device that Eva Smithwick revived to help us cope with the jealous gods." Her urgent eyes came back to him. "Those memories—those new talents—are hidden in you, Davey."

"Hidden too well." He moved uneasily on the sharp-edged

rock. "I don't know how to search."

"You must learn." Her quivering hand grew tight on his. "It's the only chance we have."

They were trapped all afternoon on the sun-broiled boulder-slide. He kept squinting with shaded eyes at the search craft in the sky. Twice, when flights of skimmers wheeled toward the islet, they slid into the water to hide.

If danger was really the necessary trigger, he thought, here was danger enough. Sitting face to face to Buglet, gripping her hands, looking into her amber-black eyes, he kept on trying to find latent recollections like her own. All he got was a hopeless frustration.

"They'll find us." Smarting with sunburn and giddy with hunger, he grinned at her ruefully. "They're already searching the edge of the lake. They've found the muman and they'll know we took the belt. They won't give up—"

"Davey Dunahoo!"

A tiny doll-voice was squeaking behind him, so thick and strange that he couldn't believe it was real.

"Jondarc!"

Gripping Buglet's hand, he caught his breath and turned to face a creature more remarkable than he had ever imagined.

BELGARD WAS A TWENTY-MILE CHUNK of tough nickel-iron. In the age of their lost greatness, the preman spacemen had slowed it with huge nuclear rockets, slung it first around Mars and then around the Moon, steered it at last into Earth orbit. Mined with sun-powered lasers, its metal had built explorer starships at first and then battlecraft for defense against the returning trumen and mumen and their gods.

Taken from its last forlorn defenders and renamed to honor the new god of Earth, escorted now by Belfort in orbit ahead and Belkeep behind, it had become part of the fortress rings guarding the planet for Belthar himself. Warrior mumen of a hundred shapes and chemistries were bred and trained in its armored heart, and it was headquarters for the Earth-god's space command, under Clone General Ironlaw.

The original genes of the clone commanders had come from a preman helper of the last Creator, and she had kept them in preman form because she found most of the variform military mutants too alien, or sometimes too alarming, for easy communication. In outward aspect, Ironlaw was a sturdy, compact, gray-eyed man, alert and straight in his black-and-scarlet uniform. The call from Belthar found him in a vast interior cavern the miners had cut from the asteroid's core, reviewing a squadron of red-winged muman fighters flying in formation drill.

"Gen—General Ironlaw!" Not used to such errands, the muman chaplain greeting him was nervous and hoarse with awe. "The Lord Belthar requires your attendance at the Thar chapel. Private audience. Without delay, sir!"

"Thank you, chaplain."

Without haste, he congratulated and dismissed the squadron leader and took an elevator to the sacred level. The chaplain commander and two sacristans were waiting, visibly worried; Ironlaw followed them into the chapel.

It was empty and enormous. The high vault was a dark star-chart of the explored multiverse, alive with the shifting wink and shimmer of all the divine domains, aflash with bright-lined interstellar routes, alight with the color-coded coordinates of the contact planes between the involute universes. Belthar's altar was a tall black cylinder at the center of the shining floor, empty now. The preman

churchmen knelt at the bench around it, bending their heads to the cold granite, murmuring their rituals above their two-fingered signs of subjection to the dual aspects of the god.

At ease, Ironlaw waited behind them. No larger than a common truman, he had three times the weight and many times the strength. His mutant tissues were nearly indestructible. He knew that his clone clan was as old as Belthar, and he felt that the Creators had bestowed equal love and skill upon him. A warrior for Belthar, he was no worshipping.

The chaplain commander intoned a chant that rumbled dully back from the vault. Slowly, silently, the black central cylinder dissolved into a glittering mist that cleared to reveal Belthar. As if appalled by his splendor, the churchmen gasped their prayers and bumped their heads again.

In that gigantic living image, the god stood twice human height. Nude in his bright nimbus, red-bearded and golden-skinned, he thundered a blessing at the kneeling churchmen and lifted one hand in a gesture to dismiss them. As if relieved, they scurried out. He looked down at the human general, who met his blue-blazing eyes and gave him a crisp salute.

"Reporting, Divinity."

"General, we have a task for you."

Ironlaw bowed slightly, waiting.

"We are concerned with an old preman myth that now appears to be more than a myth." Lower now, his voice still pealed back from the high dome and filled the empty transepts with rumbling echoes. "The legend of a demon race, bred by the last Creator in her tragic senility and let loose to disturb the reign of the lawful gods."

"I know the story," Ironlaw spoke with natural ease, almost as if the god had been a fellow clone. "But Eva Smithwick died a thousand years ago. I've never seen those demons, and your sacred reign is still secure."

"We mean to keep it secure." The god's voice crashed and boomed against the vault. "Our people have been instructed to extirpate that outrageous blasphemy since we first heard of it. The Thearchy has always loyally denied it, and over the centuries every outspoken believer has been burned alive."

"Yet the heresy persists. My good son Quelf discovered it among the surviving premen on his first visit to their reservation. Of course, he found no admitted believers—they have become too cunning for that. But, under expert interrogation, many confessed that they had listened to rumors of a demon race—hiding here on Earth, perhaps among the premen themselves."

"So that's why they are being removed?"

"The final solution, when it is carried through." The nimbus brightened with divine satisfaction. "One privately suggested by Quelf himself. As his due reward, we granted him all the remaining preman lands and allowed him to flood them with a pleasure lake. In keeping, however, with our ancient treaty obligations and the honor of the Thearchy, the preman will not be harmed—not so long as they respect our plans."

"I see."

"Resetting them on Andoranda V is our son's ingenious idea. Located in a most remote involution of the multiverse, the planet is so far from Earth that no escaping preman is likely to find his way back here. Although it offers the premen an environment where they can survive, a fortunate accidental feature of the biocosm prevents the reproduction of

Terran life. This will be the last preman generation."

Without expression, Ironlaw nodded.

"A final solution," he agreed. "I see no further problem."

"The plan has run into trouble." The nimbus paled with Belthar's scowl. "Our son informs us that several premen have escaped, in spite of all his vigilance. He is most concerned about a young pair known as Davey Dunahoo and Jondarc. They derive from the vilest scum of the reservation, but they were clever enough to impress the pilot goddess, Zhondra Zhey, who induced the reservation agent to take them into his home."

"Typical premen, they had no gratitude. When they learned about our plan, they robbed their friends and ran away. They were able to kill a human guard who overtook them at the lake. Our son has been unable to track them beyond that point. He now reports that he feels impelled to withdraw most of his forces to guard his own person from their unknown powers."

"Surprising." The general's cool gray eyes opened wider. "Are you suggesting that these young premen are the legendary demons?"

"We suggest nothing." Belthar's voice crashed louder, and crimson flushed his nimbus. "We simply order you to discover and destroy them."

"Is that necessary?" Ironlaw stiffened. "My own mission, based on these satellites, has always been space defense. The civilian church has always been able to keep order on Earth—"

"Our son suggested that you might object." Belthar cut him off. "At his suggestion—to free you for this most urgent mission—we are replacing you with your clone deputy. You will of course return to duty here as our space commander when those demons are dead."

"I see, sir." He came to attention, with a dutiful salute.

"I'll undertake the mission."

"We expect you to complete it." Belthar smiled, giant teeth gleaming through the nimbus like the fangs of some human warrior. "You will be in full command of the hunt, with authority to ask all aid from the Thearchy, the agency, and even the space command. Your deputy has already received his own instructions, and you will leave at once for Earth."

HIS SHUTTLE LANDED on the new field beneath the south towers of the Lord Quelf's enormous, but unfinished, palace on the mesa above the still-filling lake. In plain gray civilian garb, with due care to shake hands gently and to hide his quarter-ton of weight, he might have passed himself for a truman farm expert or factory manager.

Calling first at the palace, he was questioned and searched by an army of church officials and Quelf's police before they let him into the white marble throne-room. He waited there an hour before the tall, black half-god came striding in with his human guards and truman girls. Though a shocked sacristan was hissing instructions to kneel, he stood at attention to report.

"Military clone Ironlaw, at your command, sir."

"The required style is 'Your Benign Semi-Divinity,'" the sacristan whispered. "Your manner is offensive."

He stood fast, facing Quelf.

"My father says you're his best." Quelf eyed him critically.

"No special excellence is evident to me, but you are to find and kill those fugitive heretics. If you fail, I'll see that you

never return to space."

"I understand."

Quelf's underlings were a little more civil. A bright-scaled military muman took him in a skimmer to follow the trail of the fugitives and kept the point on the lakeshore where they had left their murdered pursuer.

The reservation agent and a fat Polarian monk showed him the tiny mud town of Red Rock. Its single rutted street was empty now, its people already transferred to a camp at the shuttle field to wait for their removal to Andoranda V.

"There was heresy here," the monk announced. "We've uncovered an infidel chapel."

Grim with his own outrage, he led them down into a tiny cave dug beneath the floor of the abandoned trading center. The place had a stale reek of preman filth and preman death, and dark blood was drying over the torn pages of an old preman book lying on a cloth-covered box. Ironlaw bent to inspect a curious wood carving hung on the raw earth wall above the box, the image of a naked preman nailed to a cross.

"We found one heretic dead here," the plump monk said. "An old man known as El Yaqui, who owned the trading post. His knife in his heart. I suppose he didn't want to leave his small dead god."

"I never suspected him," the agent added. "Though I knew the fellow well. The last of his family, which the church had removed from a remote mountain valley. The last believer, I imagine, in his curious deity."

The old infidel had always been secretive, and the agent doubted that he had taught the fugitives his dying faith. The mother of the fugitive boy had been a woman in El Yaqui's house. He had let the pair sleep in a barn, had sometimes thrown them food, but that was long ago, before the visiting goddess was seized with her unaccountable whim to befriend them.

At the agent's mansion, Ironlaw looked into the rooms where the two had lived. Speaking to the family, he noticed the young son's apprehension. Under his inquiry, the boy broke down, confessing in tears that he had forged truman documents for the pair and aided their escape.

The Polarian monks, Ironlaw learned, had come to survey the historic sights that would be flooded by the lake. The fugitives, in their last days on the reservation, had been laborers employed by a group digging through the battle debris of the Space War into ruins of a building believed to have been the actual workshop of the Creators, where the gods themselves were made.

Abject now, fearful for his son, the agent told what he knew about the preman belief in a Fourth Creation. The making of the gods had been a blunder—so the heretics insisted. To repair their error, the Creators had shaped a greater being, one designed to crush the gods and become the future master of the multiverse. A thousand years in hiding, this mythical 'Multiman' had been expected by every generation of the premen to appear and restore their lost greatness.

"A pathetic little legend," the agent finished. "But it's the reason our Lord Quelf went those premen hunted down. Years ago, I heard the boy threaten him with the Multiman—he was only a naked child, but furious because Quelf had killed his pet dog. If there is any real cause for Quelf's concern, it is the possibility that they found something in that dig on Creation Mesa. Something dangerous to him."

Ironlaw questioned the surgeons who had examined the dead muman. She had died an instant after firing a death-bolt from her crest. The autopsy showed that death was due to a

similar bolt, as if her own fireball had been reflected back against her by some cause they could not explain.

Her null-G belt was missing. He estimated the power that should have been left in its cells and called for weather records. There was only a slight possibility, he concluded, that the winds had carried the fugitives to the farther lakeshore, none that they had been lifted much beyond.

Visiting the truman settlements nearest the lake, he found no trace of new arrivals who might be the missing pair. He ordered their descriptions posted and returned to narrow the search.

"They're somewhere near," he told the armored officers of his gathering force. "We'll search the shore and the islands in the lake."

THE CREATURE PERCHED on a high sandstone bench, peering down at them with a single bright-green eye. Only half human, it looked monstrous. Its arms and shoulders were immense, the lower body dwarfed, giant hands brushing doll's feet. Naked, except for parti-colored fur, yellow-and-black, it seemed sexless. The head was pink and bald and baby-like, the left eye squinted shut, white teeth flashing through an impish grin.

"What—" Davey stopped to gulp. "Who are you?"

"Call me Pipkin." Its shrill little bird-voice was grotesquely too fine and too high. "I mean you no harm."

Davey had stepped ahead of Buglet and stooped for a throwing rock, but after a moment he let it fall. He stood perplexed, looking for a boat or a skimmer or a path the creature could have followed down the cliffs.

"Well, Pipkin?" He thought it might resent his stare, but he felt fascinated by its utter strangeness. "What do you want?"

"This is my home." It beckoned at the cliff. "I ask you to enter."

Following its gesture, he saw a passage into the fractured sandstone that he had somehow overlooked before. The opening was smoothly oval, twice the creature's height, the edges oddly bright.

"Why?" Buglet caught his hand, and he felt her trembling. "What will happen to us?"

"You are in danger her, and I don't want attention." It swept a huge yellow arm toward the wheeling skimmers in the south. "We'll all be safer inside."

Davey shook his head, frowning doubtfully.

"We must trust him," Buglet whispered. "Let's go in."

The creature stood aside, and they scrambled past it toward the entrance. As they came near, Davey felt an unexpected shift of weight and balance, as if he had been caught by a null-G field. He was lifted, drawn into the tunnel, swept a long way through it. Never touching the glowing wall, he was tossed out into the dank chill of a long cavern lined with rough concrete.

He stumbled when his weight came back; before he got his balance, Buglet and the creature were floating down beside him. The blue shine faded from the tunnel walls behind them; a gray fog filled it; suddenly there was only a vanishing oval glow on the gray concrete.

"Nothing magical." Pipkin grinned at his gaping wonder. "A single effect of atomic rotation. The null-G belt rotates atoms beyond the reach of gravity. The passage is formed by another rotation, into transvoluntary space."

Still dazed, Davey stared around. They stood on a long ramp in a pool of gray light that seemed to come from

nowhere. Rusty metal rails ran along the ramp, and enormous broken concrete piers loomed beyond it, where he thought enormous machines must once have been installed. He had a sense of vast unlit space above and beyond.

"An old fort," the creature was piping. "Built during the Preman Rebellion to protect Creation Mesa. Destroyed in the Space War, when the gods returned. Nuclear missiles were assembled and stored in this area.

"But come along."

Agile on tiny feet, it danced down the ramp. The patch of light followed, as if the creature itself were the source. Davey caught Buglet's hand, and they hurried after it, breathless to keep ahead of the dark. Beyond a narrow passage, they came into a smaller, brighter, cleaner chamber.

"A ready room, used by the defenders." The creature waved at metal seats and tables, at bunks on concrete shelves. "A temporary shelter for you. You'll find food and water through the door."

"This seems too good—" Davey shivered. "We were trapped out there, with nothing left to hope for." Frowning at the creature, he drew Buglet closer. "Please tell us who you are and what you want."

"Relax." With a bland baby-smile, it nodded at a hard steel bench. "I suppose you must be bewildered, but really I mean you no harm. Sit there, and I'll explain myself."

Uneasily, they sat.

"I'm a god—a botched god." With a startling show of power, it bounded off the floor and dropped lightly on a tabletop before them. "A failed creation."

The fat pink face grinned wryly.

"Though the Creators were rebuilding their own genes to extend their capacities from generation to generation, they never fully overcame their preman limitations. Sometimes they blundered. When old Huxley Smithwick set out to make the stargods, his first attempts went badly wrong. Most of them had to be destroyed—often in haste. I was more fortunate.

"He saved me for study at first, to find what he had done wrong. He soon discovered that I was too feeble to harm him, and I tried hard to persuade him that I might be useful, or at least amusing. I think he developed a certain liking for me. In the end, he kept me with him as a sort of court jester—though I was never good for anything, except sometimes to divert him from the cares of god-making.

"Certainly old Hux had troubles enough. That was an age of confusion, with the rebel premen trying to destroy the Creators and all the better beings they had made. He had grown up in hiding. When he escaped to space, carrying the seed for greater gods, I was left behind. I'm still here.

"My main defect is not the deformity you see." Pipkin raised the mighty arms and danced a quick pirouette to display the mismatched, bright-furred, sexless body. "It's lack of power. My perceptions are acute enough."

Facing them again, the creature lifted a thick finger to its squinted eye, which opened to show only blank whiteness.

"Though I'm half blind to common light, I can see and feel through the folds of the multiverse as far as any being can. Yet it took all my transvolutionary power just to rotate those few cubic meters of stone and bring you inside. The best of my meager abilities has always been required, just to stay concealed and stay alive.

"A dismal life for a god!"

A god, Davey inferred, he must be male. His situation, as he put it, seemed bleak enough; yet the green, seeing eye had

a sardonic glint, as if he ridiculed himself.

"For all these centuries I have been shut up here, a hapless spectator, observing the history of the multiverse. The expansion of the trumen into space after space. The battles of the mumen, against every sort of alien danger. Most amusing—though now and then depressing—the follies of the later gods." His laughter tinkled, a tiny bell. "Watching them, sometimes I feel fortunate."

Muscular, gold-furred fingers gripping the table edge, he swung himself to sit there, regarding them shrewdly with his single seeing eye.

Buglet gulped. "We do thank Your Divinity—"

"Call me Pipkin," he squeaked. "Just Pip, for short. Old Hux did. I'm no kin to His Benign Semi-Divinity, Quelf."

"Pipkin, then." She smiled uncertainly. "Can you really help us? Please!"

"I'm no altruist." He made a face of pink distaste. "Can't afford to be. Might have pushed you off the rocks to drown, but I didn't want Quelf's people swarming over the island, looking for the bodies. You're still a problem for me."

"We didn't mean to be."

"All an accident." He shrugged, great shoulder-muscles rippling beneath the fur. "Water getting into the lower levels. Out to look for leaks. Otherwise, might not have found you at all. Had been watching Quelf, of course—half my entertainment."

Green eye closed, he raised himself on his hands, the tiny body swinging quickly back and forth. Davey looked away and back again, still afraid his gaze might give offense.

"We...we're desperate." He showed his empty hands.

"Quelf wants to ship us off to die on Andoranda V...or more likely kill us for trying to get away—"

"I can't hide you here," Pipkin shrilled. "Not for long. Quelf's own dull underlings would never find us, but now he has brought in Belthar's space commander. A very able muman clone. I'll have to send you somewhere—"

"Before you decide, there's something we must...we must ask you." Buglet hesitated, as if unnerved by Pipkin's strangeness. "You see, I think we're more than premen."

Pipkin's swinging body froze.

"I think...I think we're Eva Smithwick's Fourth Creation. Lately, I've been getting memories I think she planted in us. If you were here—" She had to get her breath. "If you were here when she was, perhaps you know what we really are."

Pipkin's emerald eye blinked and stared again.

"We need to know," Davey begged. "To find ourselves."

"I was already in hiding, even then," Pipkin piped at last. "Eva never even guessed that I still existed. But of course I was observing her. I saw her discovering that the gods had been a blunder. Too much power, with too little love for the older creations. I watched her efforts to create the ultim—"

"The Multiman?"

"A preman label." The baby-head nodded. "She was trying to design the ultimate man. A new being with all the power of the gods—perhaps with more—along with greater love for all the lesser folk. With wisdom and justice enough to rule his share of the multiverse."

Pipkin's laughter jingled.

"Eva was still half preman, really—only a preman would have dared what she did. She tried hard enough. Her problem was that the gods didn't want to be restrained or replaced by any better being. They didn't give her time."

"Do you think—" Pain caught Davey's throat. "Do you think we could really be ultimen? Buglet, anyhow?"

"If you were, you wouldn't need to ask." Pipkin shrugged. "Or perhaps you are, if you think you are. As for me, I could only guess."

"What would you guess?"

"I did watch Eva's desperate race to complete her last creation. I observed several schemes to conceal her new creature from the returning gods. One was to make it latent, hide it in the genes of the premen. Since I've met you, my guess would be that you do carry the ultiman in your genes."

"Then what can we do—"

"If you want another guess, all I can give you is the obvious." The lone green eye squinted quizzically at Buglet and back at Davey. "Perhaps your children will be the ultiman—if you survive to bear them."

He caught Buglet's hand, felt her body sway against him. Emotion washed him, a sharp ache of longing and a wave of icy dread.

"That's all we hope for," she was saying. "We're trying to reach the truman lands. We hope to hide there, to live our lives as trumen."

"We have passports," Davey added. "To show that we are wandering laymen. Yedsong and Yedsguide, followers of the missionary teacher, Yed—"

"Let me see."

Pipkin squinted at Davey's passport and shook his head.

"A childish forgery. It would only get you killed."

"So what can we do?" Davey looked at Buglet's anxious face and back at the imperfect god. "If we do have new powers, we need to find them now. To save our lives. Can't you—can't you help us discover what we are?"

"Only you can do that."

"But you will help?"

"I'm no friend of the great Lord Quelf." Pipkin grinned.

"But I won't risk my own skin. I can't keep you here, though getting you safely away may tax my limited powers. I need time to work at the problem."

He swung from the table, dropped before them on his hands.

"While you're here, accept my hospitality."

He danced away on twinkling feet.

Whatever his powers, they found that he had somehow installed a modern robochef in the kitchen that adjoined the old ready room. They carried their loaded trays back to the tables, but Davey felt almost too anxious to eat.

"What now?" he whispered.

"We must trust him." Buglet's eyes turned dark. "I feel sorry for him. Think how lonely he must be. The only one of his kind that ever existed, or ever will." Smiling solemnly, she reached for Davey's hand. "I hope he finds a place for us. A good place, where we can have children."

He leaned across the table to kiss her sun-cracked lips.

The robochef did not dispense the simple dishes they loved, the peppery meat and savory squash and roasted corn, but the truman food was good enough. They filled themselves and climbed into the bunks. Wondering what fate the little god might find for them, Davey thought he ought to stay awake and watchful, but suddenly Buglet was shaking him out of a terrifying dream in which an insect swarm of flying Pipkins had been hunting them across an endless desert with hissing crimson firebolts.

"You must have been pretty desperate." She was almost laughing. "I thought you needed rescue."

"Thanks, Bug." He sat up, shaking off the nightmare, and saw that she was wearing an odd gray coverall.

"Our old clothes are gone," she said. "Passports, too."

He put on the garment that had been left for him and tried to explore the rooms around them. All the passages he found were closed with heavy metal doors he couldn't open, most of them sealed with what looked like a thousand years of dust and rust.

"We're prisoners."

"Or guests." She smiled gravely. "Perhaps it's better if you think we're in danger. It might help you discover yourself."

He sat with her a long time, groping for some unconscious recollection that would make him part of Eva Smithwick's last creation.

"No use!" Angry at himself and almost at her, he stood up to pace the narrow room. "Really, Bug, I think I'm just a common preman."

She wanted to try gain, but he had no heart for another useless effort. They ate another meal. He went to listen at the metal doors, but he heard no sound at all. He was lying in his bunk, half asleep again, when he heard Pipkin squeaking.

"I have done what I can." The dwarf god bounded to a table near them. "Dropped your clothing and passports on the west shore. Should divert Quelf's people to the dam and canyons around it. You'll be flying east. Null-G belt recharged. Promise you a strong west wind tonight."

"But," Davey said, "without passports—"

"Better passports, and a better story for you," Pipkin chattered. "You are Threll Bluesea and Ven Hillstone. Truman students from a small colony in a frontier star system. Your god is Crethor, very junior, setting up his own domain. An actual god, by the way—distant relative of Belthar. His subjects remain marginal survivors. No surplus time or wealth for education. You got your passports through friends in his harem. But don't talk about them—life on Kroong IV is so grim you prefer to forget it. You are here to visit holy places and get an education. No funds. You'll have to work your way."

The green eye fixed them.

"Can you do it?"

"We can," Davey said.

"Envy your good cheer." Pipkin's baby-smile seemed wistful. "Doing the best I can for you. Passports will stand inspection. Good season for you—time when students often seek temporary jobs in the farming settlements beyond the lake. Have to warn you, however. No more help from me. Expect you'll have problems enough. Quelf's clone hunter will never give you up."

"Thank you, Pipkin!" Buglet whispered. "I know we can't repay you. But, whatever happens, we won't tell—"

"Need no promises." His small laugh jingled. "Because I take no chances. Blocks set in both your minds. Even under inquisition, you couldn't tell."

He gave them the recharged null-G belt and the new passports. A glowing oval on the wall of the ready room dissolved to open a blue-shining tunnel. Davey caught Buglet's hand, and they stepped toward it together. Glancing back to wave farewell to Pipkin, he saw the dwarf god spinning high in the air, clapping gold-furred hands. The field caught them, swept them through the tunnel, tossed them out on broken sandstone. On the cliff behind, a luminous spot faded and vanished.

It was dusk above the lake, and a bracing wind blew out of the west.

UTOPIA HOLY WAS NAMED for a preman myth of the perfect state. A young tithing, it had been granted the arid western end of a dismembered preman wilderness that once adjoined the Redrock reservation. Its truman settlers were industrious as ants, repairing the ravages of natural erosion and preman neglect for Belthar's glory and their own benefit. A survey team was staking out the route for a new irrigation canal across the north mesa on that hot Tenday afternoon when the two strangers climbed out of a rocky arroyo.

Scratched and sunburnt, they were desperate with thirst. They looked young, the girl barely nubile, the boy not fully grown. Speaking Terran with a slight accent, they explained that they had been searching the mesa for a sacred place, a shrine built many centuries ago to mark the spot where the Creators made the gods. Finding nothing, they had been wandering for several days.

"You're really lost," the surveyor told them. He was Brother Lek, a vigorous brown muscular man, a lay expositor and a deacon in the tithing. "According to the legends, Creation Mesa is a long way west, out in the preman reservation. I've never heard of any shrine there—"

"We need water," the boy begged. "Please!"

"You'll have to wait a bit," Lek said. "We have work to finish—"

"The work can wait." Sister Yeva was his apprentice, a sturdy, well-tanned redhead. Lek had been her instructor in love as well as surveying, and in her awakened glow of total satisfaction, she wanted no pain for anybody. "I'll bring up the skimmer."

He questioned them, somewhat critically, while she was gone. They were Threll Bluesea and Ven Hillstone, from a frontier world beyond a newly-found contact plane. Their god was Crethor, who had claimed the planet only a single truman generation before. Looking legal enough, their passports carried visas from the Terran Thearchy granting them the status of student guests with permission for an indeterminate visit.

"Can you help us find a place to stay?" the girl asked. "Kroong IV is a poor planet. Our money is gone, and we must find work."

Brother Lek had become suspicious of students asking for work at the tithing. Too many, in the past, had been worthless idlers; a few had even been exposed as secret scoffers at the infinite love of Bel and the infinite wisdom of Thar. These two, however, looked too young and too hungry to be professional vagrants; and the yellow-eyed girl was already budding into a very alluring maturity.

"We're willing," the boy was urging. "We don't know your ways, but you'll find us anxious to learn."

"You can ask to visit the tithing, or even for a probationary membership." Lek frowned at him sharply. "But we don't admit many. Our quotas are almost full."

Sister Yeva was landing the skimmer in the sharp-scented juniper near them. She came out with bottles of water and a basket they had brought for an after-work picnic. The two drank avidly though the girl paused to apologize for their greed.

Leaving them with the basket in the shade of the skimmer, Lek and Yeva tramped back to their surveying. The two were asleep when they returned, but the boy sprang up as if in fright when he heard them snapping through the brush.

In the skimmer, on their way back to the center, Lek began asking about their lives on Kroong IV. Though the boy

seemed uneasy and evasive; the girl answered with a wide-eyed candor.

"Kroong IV is a small planet. Too far from Kroong itself. Too cold and too dry and too poor in everything—even atmosphere. I wish Crethor could have found a better world. We want to forget everything that happened to us there, and I hope we never have to go back."

She smiled shyly at Lek.

"Won't you... Won't you let us stay here?"

"That's for the deacons to decide."

"But he's a deacon." Yeva giggled and nudged him intimately. "He'll help you."

The center capped a gentle hill in the older section of the tithing, among fruit-bearing trees and ripe grain fields laced with full canals. They landed on the paved square between the chapels of Bel and Thar, and Yeva waited with Davey and Buglet in the skimmer while Lek went to speak to the rector.

The boy still seemed apprehensive, but the girl was asking eager questions about the buildings under the mirror domes around them, the dining halls and dormitories, the toolhouses and barns, the packing plants where the food products of the wide commons were processed for shipment, the hall of culture, and the sports complex.

"A good place." She nodded eagerly. "A kind and friendly place. I hope they let us stay."

"We're happy here." Yeva smiled, almost complacently. "The land is bountiful when we bring water to it—I can't quite imagine why the old premen let it go to rock and dust and brush. Of course Belthar is good to us. A more generous god, I'm sure, than your Crethor was."

When Lek came back, he had permission for them to stay at least until the deacons met. He gave them cards for work and food and shelter, and Yeva helped them find quarters. On Tharday afternoon, with Yeva as a sponsor, they appeared before the deacons and came away with the rector's blessing as probationary members of the tithing.

"You couldn't find a better place," Lek boasted that night in the dining hall. "I've seen the cities and studied in the great seminaries and worshipped in the holiest temples—I've even seen the living Belthar. There's no place like our tithing. We live on the good earth and make it better. We feed ourselves with our hands; there is plenty for others. We have good air, wide space, and peace. We share one another, to Bel's delight. If we sometimes wish to touch a wider world, we have the learning center and the hall of culture. You'll love Utopia Holy."

"We're lucky—" the girl's voice was broken with emotion, "very lucky to be here."

Lek nodded, in unspoken approval of her young loveliness.

"Sometimes," he went on casually, "I think of the premen who used to claim this land. You've seen the north mesa, the way they left it. Washed to dry ravines full of thorns and snakes and scorpions. Sometimes I try to imagine what sort of creatures they really were, how they lived, why they died."

The boy's sunburnt face set grimly, as that picture pained him. Perhaps, Yeva thought, it reminded him too bitterly of his hardships on Kroong IV.

"Imagine the premen!" Lek's lean brown face grimaced with disgust. "Killer apes, pretending to be men. Actually killing one another often enough, if their own legends are true, in organized wars and private fights. Robbing one another, misruling one another, while they all rotted alive with a thousand vile diseases. Decaying of age from the moment of maturity. Wallowing in filth and ignorance and

SLAVE TO CHAOS

their own stupidity, worshipping whole galleries of fantastic gods they generally had to imagine."

He stared at the uneasy boy, almost as if accusing him.

"Think of all that—and thank our Creators for the difference!"

"We're thankful." The girl spoke quickly, her eyes fixed on the boy. "To the Creators." She turned her luminous smile on Lek and Yeva. "And to you, for finding room for us."

They seemed for a time entirely delighted with life in the tithing. Cheerfully, they tried to master their unfamiliar tasks. Silent about themselves, they seemed alert to learn new ways and new customs. With the boy's quick readiness and the girl's warm charm, they began to win friends.

Yet they were always somehow detached and reserved. They had not time for games, not much even for the chapels. After meals and after work, they always hurried to the information center. As illiterate as premen at first, they were learning to read.

Their progress was remarkable, as if the primitive rigors of Kroong IV had left them famished for knowledge. With Lek for a teacher, or sometimes Yeva, they came to grasp the shifting gestalts as swiftly as premen used to scan their primitive print. Soon they were spending long nights at the center, devouring a strange array of texts.

Some of their choices puzzled Lek. Ignoring the basic works he suggested on the ethics of Bel and the philosophy of Thar, on the history of the Terran Thearchy, on the social organization and the economic management of the secular state, they turned instead to difficult studies of divine metaphysics.

"Be practical," Lek urged. "These are revelations from the gods and the half-gods, made to guide the supreme thearchs. What do you care about the energy-sources of the holy nimbus or the mechanics of extra-spatial perception or the processes of transvoluntary rotation?"

The boy looked tense, somehow disturbed.

"There's so much to learn," the girl whispered quickly. "So much we long to know."

"There are things you'll never know—never need to know," Lek smiled at the girl. "These are texts I never tried to read, because good scholars at the great seminaries told me that no Truman could really master them. Actually, the multiverse is too complex for the Truman brain to understand. There are sciences only the gods can learn."

"That must be true," the boy agreed, his expression oddly grim. "But we want to know all we can."

Their concern with current history seemed equally odd, because outside events seldom mattered to the tithing. Belthar had reigned a thousand years and he would live forever. His consecrated servants had neither need nor fear of change. To his pious people, Utopia Holy was world enough.

"I know you're students, but you always seem too anxious," Yeva protested, when she had seen them hovering too often over the flashers in the news section. "When you learn our ways, you'll be content here. You won't have time to fret about statistics on industrial production or Thearchy politics or the loves and the hobbies of Belthar's sons—You'll never learn much about our Lord Belthar himself, because his affairs are not reported."

"It's the premen that trouble me." The boy frowned. "Their lands have been taken away. The last of them have been shipped to a far-off planet, where the newsmen say they can't have children. Since the Creators themselves were

premen, that seems unfair—"

"Maybe we're wrong." The girl spoke quickly, with a sharp look at him. "We're still strangers here, with many things to learn."

"You'll learn not to question Belthar's will," Yeva told them gently. "Here on Earth, he is our only god. If he has disposed of the premen, that's because they have no future place in his divine plane. When you learn Terran history, you'll find that they have always been wrong-headed rebels, always crazily unwilling to submit to the wisdom of Thar or to enjoy the love of Bel."

She paused to smile at the boy, to eye the girl more thoughtfully.

"We like you both," she went on. "We want to keep you here, but sometimes you worry us. As Brother Lek says, you don't seem to feel at home. If you wish to belong to the tithing—to belong truly, to share our happiness—you must learn that Utopia Holy offers everything you will ever need. You must cease to fret about those few surviving premen who still refuse to give their hearts to Belthar."

"We're trying," the girl whispered. "Trying hard."

Yet, in spite of such kind advice, they kept searching the flashers for reports of outside events and kept struggling over difficult works of holy metaphysics, never showing a sign that they were finding anything that pleased them.

They were alone in the information center one Belseve, screening a lecture on the mathematics of the multiverse, when Lek and Yeva dashed in, laughing, their clean brown bodies fragrant with the garlands of Bel and already aglow with excitement.

"Wake up!" Lek shouted at them. "You don't need any seminarian professor to teach the rites of love. Tonight belongs to Bel. Come along with us. Wash away your worries and let Yeva weave your flowers—she has a blessed gift for that."

Silently, they looked at each other.

"Do come!" Beaming at them, Yeva clung to Lek. "To the chapel, first. You've never seen such flowers. You've never lived, till you learn the joys of Bel."

"Thanks," the boy muttered. "But not tonight."

"We're students, remember," the girl added. "With too much to learn." Almost frowning, she showed no hint of Bel's ecstasy in the anointed flesh their garlands revealed. "Our god was Crethor," she said. "His rituals are different."

"Perhaps." Lek shrugged impatiently at the shimmering screen. "But now you're students here. I'm afraid you aren't learning what you should."

Uncomfortably, the boy stopped the lecture.

"Aren't you happy here?" Suddenly serious, Yeva left Lek's arms to sit beside them. "Can't you settle into our ways?"

"We try," the boy said.

"It isn't easy." The girl dropped her eyes to avoid Lek's eager gaze. "Please... please give us time."

Yeva felt hurt. "Haven't we been good to you?"

"Too good." The girl smiled uncertainly. "Maybe that's the trouble. Everybody is just too nice. Life is too simple, too easy. The land is generous and you are kind. We are used to something else, back... back on Kroong IV. We always had the unexpected, and generally it was bad. Disasters, injuries, illness, disappointments, quarrels—"

"If you're bored, we have a beautiful cure." With a wide brown grin at Yeva, Lek freed a rope of woven flowers from his waist and flung it around the girl. "I think you need the

blessing of Bel." He tugged her toward him. "We have always suspected that, and Yeva has been hoping we might exchange soon—"

With a startled gasp, the girl broke the rope and twisted out of his reaching arm.

"Don't you touch her." The boy sprang between them, pale and trembling. "Don't—"

"We want to be friends," the girl whispered. "But not...not lovers."

Half vexed and half apologetic, Lek made them sit again while he explained the customs of Belseve, when the god ordained the open sharing of love and the free exchange of partners. Awkwardly, the boy confessed that they were still virgins.

"We want to marry," the girl added. "We want children, when we have a safe home for them."

"Marry?" Lek frowned. "Isn't that a preman term?"

"Marriage was a tradition of our people," she insisted quickly. "Out on Kroong IV."

"Not here," Lek said. "If your colony had genetic damage, I can see a reason for rejecting partners. But we've none here. Thanks to the Creators, our Truman genes carry no defects. When the Thearchy allows us another birth, the women gather in the chapel to let Bel select the mother. Though we thus honor the mother, the child belongs to all the tithing."

"I'm sorry," the boy said. "But we aren't used to that." "I want his child." Their hands clung hard together. "No other."

Lek scowled with outraged pity.

"You have no quota for a child," he warned them sternly. "With such ideas, you'll never get one."

"I hope you see what fools you are." Impulsively, Yeva flung her arms around the boy. "You're missing too much!"

"Please." Awkwardly, he pulled away. "We have each other."

Giggling at him, she whirled back into Lek's embrace and they hurried off to the chapel.

BEFORE THE NEXT BELSEVE, a large church skimmer dropped into the square. The district bishop came down the gangway, with his personal curate and a compact man in secular gray who identified himself as an inspector from the tithe office. The rector rushed out to meet them and found they had no time for ceremony.

Without saying why, the inspector wanted to visit the information center. The flustered rector escorted him into the dome and watched him scan the bulleting screens and dig through the documentary files and question the frightened librarians. He failed to find what he was looking for.

"This should have been here." He produced a holographic notice. "Please post it at once."

The notice pictured and described two young premen, fugitives from the Redrock reservation and the justice of Belthar, who were now under penalty of death.

"They're here." Peering at the holograms, the rector turned pale. "Our student probationers." His nose lifted righteously. "They have been claiming that they learned their strange ways on some outlandish planet they call Kroong IV, but I always suspected that they were secret infidels."

Davey and Buglet were helping run the new canal across the north mesa on that hot Huxday, she carrying a flag to guide the ditcher, he breaking rocks ahead of its cleats with a heat-gun. The work was heavy, but they had volunteered in

hope of keeping their welcome in Utopia Holy.

Sweating from the sun and the radiation from fragments of incandescent rock, Davey was in a downcast mood. Try as they would to conform, he knew they would never be trumen. Even if they were somehow allowed to stay on at the tithing, they would never get permission for a child.

All their study had failed to unlock the latent powers Buglet hoped for. The physics of the multiverse remained a baffling mystery, the symbols for its transvoluntary forces no more than perplexing riddles. With all his groping effort, he had found no way to sense or seize even a single atomic particle beyond the narrow limits of their own narrow space and time.

With Brother Lek in the air-conditioned cab, the huge machine kept too close behind him, gulping brush and soil and stone, excreting smoking yellow concrete to line the channel. Davey was clumsy in the stiff safety suit, half-blind with the sweat in his eyes. A little light-headed from fatigue and the hot sulphur-reek that drifted from the roaring mass-converter, he was longing for water and lunch and rest, and he couldn't help feeling a crushing sense that nothing mattered.

Sooner or later, they would be expelled from the tithing, with nowhere else to go. Some church official, searching the sacred data banks for records of Threll Bluesea and Ven Hillstone, would find that no such students had ever arrived from Kroong IV.

A shadow flickered across him. He shut off the laser and pushed up his thick goggles in time to see a big skimmer overhead. Sunlight glanced on the linked triangles of Thearchy as it slid down into a juniper clump beside the ditcher.

A short gangway dropped, a giant muman fighter bounding down it. Another followed, then a third. An agile man in secular gray darted after them. Two of the red-scaled warriors plunged at Davey, crest lenses burning. The third went leaping after Buglet, pale pathseeker shafts hissing out of its killer eye.

Trying to see, Davey blinked at the stinging sweat and wiped his face with the back of a heavy glove. The great steel cleats of the ditcher loomed over him and abruptly froze, as Lek stopped the machine. In the ringing stillness, Davey heard a sharp report, saw an exploding firebolt shatter the staff of Buglet's flag.

He started toward her.

"Stop!" Moving with unbelievable speed, the gray man was already before him. "In Belthar's name, you are under restraint."

He stood clutching the heavy laser, shivering to a nightmare sense of disaster too sudden and too vast to be escaped.

"You're a preman?" The gray man's voice was sternly chilling, oddly quiet. "A fugitive from the Redrock reservation and the laws of the Thearchy? Known as Davey Dunahoo?"

"I—" He tried to get his breath. "I am."

"Your companion with the flag? The fugitive female preman known as Jondarc?"

Helpless, he could only nod.

Sister Yeva came dashing toward him out of the skimmer. He watched with a faint spark of hope until she recoiled from him with a gasp of terror and ran wildly past him toward the ditcher, screeching something at Lek.

"Drop that tool," the quiet man commanded. "Stand where you are."

Davey was trying to think. The safety suit might shield him briefly, and the laser's ray was almost as deadly as the mumen's hissing firebolts. He tossed his head to snap the goggles back into place and crouched to grip the gun.

Almost too fast for Davey to see, the gray man came at him. The instant flash of the nearest muman's lens flickered faintly through the goggles. Near thunder cracked, and a stunning shock hit him through the heavy fabric. Dazed with pain, he lurched forward and tried to lift the laser, to slice at the gray man's belly.

But the gun was gone, torn out of his stinging fingers before Davey could move it, his gloves and goggles torn off as well. Hot rock fragments showered him, shattered by his own heat-ray. He stood breathless and blinking in the sunlight, watching the gray man's hands. They were twisting the heavy laser into a metal knot as if it had been something shaped from soft clay.

"I am Clone General Ironlaw." Almost absently, the gray man tossed the bent metal back into the canal. "Acting as a special agent for our Lord Belthar. My orders are to recapture you two premen. I prefer to take you alive—if you can display some degree of reason."

Choking in the bitter smoke from the rock and brush his ray had struck, Davey stood still. The two mumen moved closer, one on either side, towering tall above him, sunlight glancing on ruby armor and long black talons.

"Won't you bargain?" Ironlaw might have been a shrewd truman trader back on the reservation, offering to barter some glittering trinket for an ancient piece of preman art. "Will you name your accomplices? The criminals who forged your false documents and kept the news of your escape from reaching—"

"Tell him!" Lek came stumbling from the ditcher, hoarse and pale with terror. "For Bel's sake, tell him we are innocent. Tell him we were tricked—"

"Quiet!"

Though Ironlaw had not raised his voice, Lek staggered back to Yeva.

"They are innocent." Davey wet his sweat-salted lips. "They were our first friends here, but they had no reason to think we were premen."

"I was hoping you could be human." Ironlaw nodded with emotionless approval. "Now, the names of those who did assist you. In return, I'll try to save your lives. That may not be possible, but at least I can help you avoid an unpleasant inquisition."

He stepped closer abruptly, shattering a rock beneath his boot.

"Now I need names."

"Nobody helped us." Only half aware that he was lying, Davey felt astonished at his own readiness. "I think you underestimate our abilities."

The words weren't quite his own, and somehow he thought of Pipkin as he spoke them. In his oddly vivid image of bright fur and doll's feet and giant fists, the botched god was dancing in the air, grinning gleefully. That fleeting recollection brought Davey an instant of good cheer, but then he could not recall its cause. Dark despair fell back upon him, as cruel as the muman's bolt. The savage sun felt hotter, and the safety suit weighed him down.

"Don't stall," Ironlaw was urging. "Don't try any stupid preman tricks. My bargain is your only chance—"

Twigs crackled, and he turned his head enough to see Buglet beside him, the third muman loomed behind her.

Jack Williamson

Strangely, her face reflected none of his dismay.

"We're okay, Davey!" Somehow, she was smiling. "This could be just what we need—"

"Silence." Ironlaw's voice lifted slightly. "Or name your allies."

"We don't need allies." Her eyes flashed golden. "You can't touch us. Remember what happened to that muman at the lake."

Listening to the ring of her untroubled tone, seeing the unquenchable light in her eyes, Davey found an unexpected resolution. A tremor of astonishment washed over him, and left him with something of her supernal calm.

"Let's go!" he whispered to her. "Let's take the skimmer."

"Go!"

They ducked and plunged. One on either side of Ironlaw, they dashed between the mumen toward the skimmer. Davey had no plan, but he thought they should have at least an instant of safety, until the mumen could fire their bolts without striking one another. Though he had no hope, they had nothing left to lose.

Time slowed. Hampered by the safety suit, his limbs seemed frozen. He caught one long breath and took three laborious steps. His back tingled as if he could feel the pathseekers stabbing him.

"Kill!"

Ironlaw's short command hung in the motionless air, stretched by his altered sense of time, fading as slowly as the tone of a temple gong. Buglet had edged a little ahead of Davey now, and he saw the pathseekers probing past her, thin streaks of violet rain. Their sharp lighting-scent edged the air.

The firebolts followed, their thunder strangely muted. Somehow, they failed to follow the ionized violet tracks. Something caught the firebolts, curved them, hurled them back at the mumen. The far crashing ceased. He heard a gasp, a curse, a moan. Suddenly, stillness.

Swinging his heavy boot another slow step forward, he twisted against the cramping fabric to glance back. He saw the three mumen, almost frozen, sagging visibly toward the rocks like red wax figures too long in the sun.

Ironlaw burst from among them, oddly unslowed. His gray cape was whipped back by the wind of his motion, his boots digging deep pits in the soil, raising lazy puffs of yellow dust. His strength and speed were more than muman, and Davey thought that he and Buglet could never evade him.

But Buglet, too, was looking back. For one unending instant, she didn't move at all. The sun's blaze grew brighter around her, as if caught by smoke or dust, bathing her in a momentary halo. A sudden tongue of bright haze licked out of that, wavered, thickened, struck like a shining snake at Ironlaw.

In an instant that glow was gone, as fleeting as something imagined. Alive again, Buglet ran on toward the gangway. Following, Davey fought like a swimmer in some thick fluid to take each step. He heard Ironlaw's breath rush out behind him, the gasp thinning and stretching into a dying sigh.

Glancing back, he saw the clone's stern scowl relaxing, saw him leaning low, legs folding deliberately. A long time falling, like some toppled tower, he came down at last face first into the sharp-scented juniper.

Time was crawling faster before they reached the skimmer.

[Continued on page 75]



HE COMPUTER BUILDING was in the center of the campus, not that long a walk under ordinary circumstances. And if it didn't look quite the paragon of modern efficient architecture when the sky was grey and the dead trees seemed to leer at it, at least it looked warm. I regretted, briefly, not taking a cab, but when you've been a junior professor most of your life you get used to walking.

I sprinted the last few meters to the door, fighting the freezing wind, and went in. The weather had made me a little late, so I changed into a clean lab coat as quickly as I could and waved my ID perfunctorily at the various security people. It took about five minutes to spiral into the heart of the complex, past the grad students and the various time share people, and into the depths of the Artificial Life Project, better known as Morlock's lair.

"How's the patient?" I asked the first white coat I met, who also happened to be my boss.

"A-OK," Saracen said. "He's been up all night skimming through romantic novels and gushy films." Saracen peered at me through massive horn rims, his leathery, sun-ravaged face more that of a sailor than head of a classified research project.

"Perfect. And what does he think about all this?"

Saracen shrugged. "Ask him yourself. We're ready to get started if you are."

"Righteeoh, boss. Got the cards in my office."

Saracen, always brave, followed me to the coffee-stained warren that was my second home, waited while I undid my safe, and got out the attache case. I was almost tempted to take out the cards and shuffle them a few times, just for a laugh, but at that point I still wanted to keep my job.

We rounded up the requisite technicians and headed for Morlock's quarters. Perhaps from poetic justice they were at the hub of the building's concentric corridors. I had always suspected, myself, that the arrangement had been made by an empty-headed science fiction fan who wanted to protect Morlock from photon torpedoes or cosmic rays. The sign on the door said MORLOC, Modular ORGAN and LOGIC Capability. I suspected the acronym was bent to fit existing initials. But then I never had understood why a glorified robot rated a better office than I did, even if it was surrounded by microphones, TV cameras, and control consoles, much like a set on a movie sound stage.

The kid was not that happy to see us. In a very short time he had accumulated a considerable store of human expressions, and used them cunningly and without mercy. He was wearing his forlorn face when Saracen and I walked in. "Please don't do this to me," he begged, but he didn't quite have the intonation right, and we weren't fooled.

Saracen laughed it off and said, "Come along now, you know this is in the interests of science."

It was hard to tell when Morlock was kidding, or if he even really knew how. Intentionally or not, he could give as good as he got, usually better. When Saracen had first explained Morlock's name to him as the "monster of the future," he had barely blinked, replying, "I am programmed to appreciate irony."

This time he reverted to a blank face in a nanosecond and stared right at me. "If I were sure," he said, "that this were more than an expensive prank, I would not object."

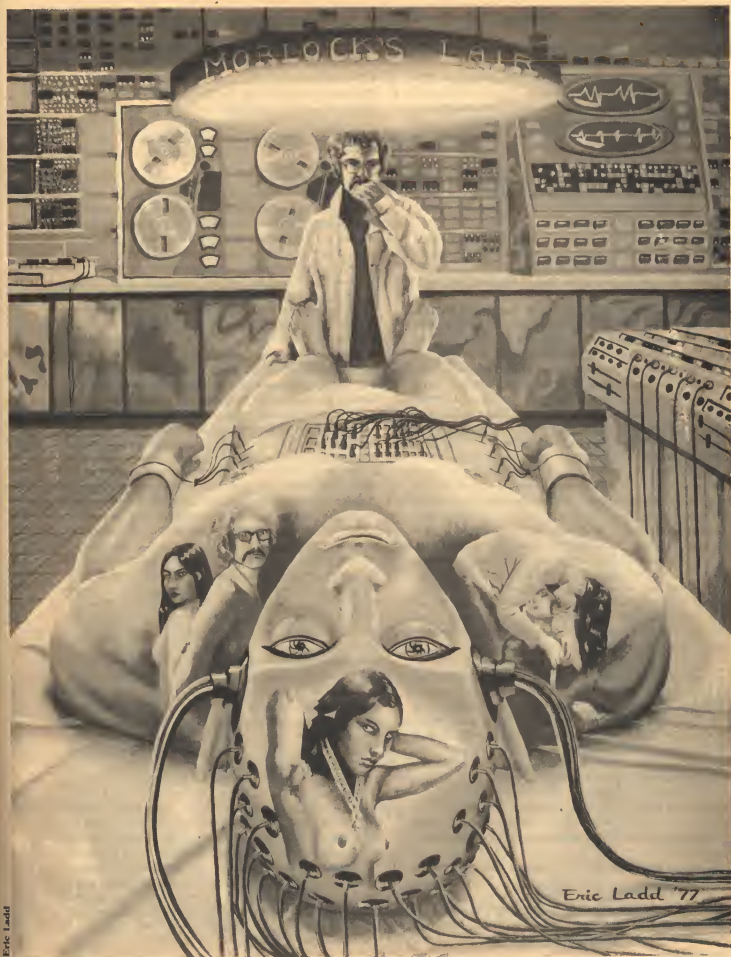
"Okay, boss," I mumbled to Saracen, "now I know how he feels about it."

* We walked toward the operating room, Morlock matching our pace. A product of cloning and microengineering, he was

Lewis Shiner

TINKER'S DAMN

When Saracen had first explained Morlock's name to him as the 'monster of the future,' he had barely blinked, replying, "I am programmed to appreciate irony."



a little over seven feet tall, a trifle broad-shouldered, but otherwise completely anthropomorphic. His head even bobbed a bit as he walked, slowly, but not holding back. In his own way he was handsome, with a smooth hairless head and features that were streamlined and generalized rather than individual. When he looked at us, he might have been a drawing in a text on facial anatomy, the bones and muscles covered by only a thin, translucent membrane. Morlock was unable to resist us, even had he felt that strongly about the issue.

"The uncertainty principle applies here," he said. "By attempting to program me with the romantic notion called love, you are yourselves acting under a romantic notion and it will prove nothing." He spoke as if punctuation were something apart from sentences.

"It's temporary, pal," I said to him. "Not to worry. In a week you won't even know it had happened." Which will make you, I thought, a hell of a lot luckier than the rest of us.

Machinery doesn't care what time of the year it is, but I found the operating room too cold for the season. I shivered a bit and pulled up the collar of my lab coat while Morlock stretched out on the table. It only looked like an operating room. Actually, it was a tie-in to the main computer, and was used exclusively for reprogramming Morlock. Also unlike an operating room was the relative lack of importance to what went on there. The business at hand was just the gravy, and if anything went wrong it was going to be because of a foul-up in the planning that had gone before. The program was already written, already punched out. I fed in about three stacks of cards, and then watched while the technicians attached their wires and spun their tapes. I was uneasy about the whole thing, even if Morlock had relented. Every time a new program is run there's always the chance that everything done before will be screwed-up. And this time I was really afraid.

Okay, so we were being a little frivolous. On our grant proposal to NSF we had budgeted several months for testing our new toy, not all of it on government projects. Computation is for computers and Morlock was more than a data retriever, even though he had a microprocessor where a diaphragm might have been and a 128K of core memory in what might have been lungs. We had things we needed to know about Morlock's potentials, and if we could crack a couple of private mysteries while we were at it, then why not?

WHEN EVERYTHING WAS DONE, Saracen and I led Morlock back to his room. He was always a little groggy after a new program, and we tried to be with him for a while right afterwards. Human companionship probably didn't matter much to him, but it made us feel needed. We bedded him down, connected his life support systems, told him to get some shuteye, and left him alone.

"Anything else, boss?" I asked.

"Not that I can think of."

"Well, he didn't blow up in our faces or anything."

"No, not yet. But it's a little early to tell, don't you think?"

"Okay, boss. Sorry. Just wanted to be patted on the head, I guess."

"You're a good boy, Steve. You can even go home now if you like."

"Might as well. I'll see you tomorrow."

It was only mid-afternoon, but the sky seemed to be getting dark already. I trudged back to my apartment, consoling myself with the idea that a celebration was in order; I could

have a drink as soon as I got home.

We had two days to cool our heels and let Morlock assimilate the new program before we turned on his gonads. Which was shop talk for the second phase of the experiment—after Morlock had been left to stew about the conceptual notion of love, he was going to be shot full of hormone equivalents and his reaction measured. Instant puberty, if you will. It made sense in a lot of ways, like checking out the theoretical interpretations of his EEG patterns, and giving the endocrinology boys some hard data for a change.

The whole project stirred up some genuine excitement in the AL ghetto. Allegedly humorless technicians came up with 'Robot' jokes, and people who'd been on the staff the full ten years started having a little fun. This included Saracen and me, and God knows we needed the relief.

The prospect of a hot toddy began to look better and better as I climbed my front steps. Being so cold outside, my nose had been threatening for the last few minutes to fall off and shatter on the pavement. My apartment, of course, was tundra temperature except for a few superheated meters around the open gas stove, where I headed immediately. Once thawed, I did the same for a TV dinner, mixed a drink, and sprawled out on my couch. I had abandoned the idea of a hot toddy as too much trouble, settling for a scotch and ice cube. Getting my boots off, I hung my feet in front of the heater and watched thin steam ooze out of my socks.

The drink soon disappeared, as did a second one, as did my tasteless dinner. In a newer, brighter apartment, the silence might have been merely complaisant, but from where I sat it was getting depressing. I finally turned on the radio and had another drink, and as I began to unwind I thought about Morlock. He would have been alone in his cramped little cell then, feeling the first pangs of love. I regretted then, as I had before, the pain that he was about to suffer.

I knew what the pain was like because I had written his program.

It had been checked for logic, of course, by diverse hands. Various people had closely examined separate portions of it. But to completely understand it would have taken at least a year. That was how long I had spent writing it.

A few tentative snowflakes began to ping the windows, and my evil mood came over me, the one where I could no longer delude myself about the science end of the experiment. I knew that I was doing it to shake the ghost of my wife—check that, ex-wife—and that made me a royal bastard.

I'm not a monomaniac or anything. I didn't think about Marty more than once a day or so, and the divorce had only been final for two years. Think of me as a hemophiliac, an emotional bleeder. I believed for four years, ever since things went bad, that I would get over her. I kept telling myself that, and when I stopped believing it, I wrote the program for Morlock.

I had another drink and tried to read, but I threw the book down when the hero decided to patch things up with his girlfriend. By this time, I had reached "sloppy" on the Hemingway scale of drunkenness, and before long I would be "talking rot." I stood at the window and watched the snow falling. I hated winter. In reasonable times, a man can go into the night and shake his black beast with a game of pinball or a few laps in the swimming pool. But come the snows and you are caged with him, devouring each other into the night.

I was wondering idly if I could get myself to pass out with

just one more drink when I suddenly heard the radio I had left on...the song that was playing. There were two or three songs that had meant something to Marty and me, back when it was good, and this was one of them. It affected me roughly the way Green Kryptonite did Superman, and everything fell away from me. Instead of getting that next drink, or even crossing the room to shut off the machine, I just sat on the edge of my bed and cried. I cried for Morlock, for myself, and for the way Marty had changed so completely. When I was done, I felt no better than I had before.

THE NEXT DAY the center looked like a big strawberry cake with white icing, and the thought made my head hurt. I stopped off to see Morlock before my first class. A grad student was watching his monitors and I asked how he was.

"A little quiet," she said. "Brooding would be too strong a word, so best I say he seems to be mulling things over."

"Is he taking visitors?"

"Taking them, but being a little curt. I get the feeling he wants to be left alone."

As well he might. "I'll respect that feeling then. Maybe check back later."

The afternoon dragged on and I seemed to be getting progressively more groggy. Coffee didn't help and tasted somehow more foul than usual. I started sneezing about three o'clock and taking the hint, I packed it in. I phoned for a cab rather than compound whatever plague I had into pneumonia by walking through the minor ice age outside. The AL offices seemed almost deserted, so I ended up leaving word with the girl at Morlock's board that I would probably not be in the next day.

"But you'll be here for Phase Two, won't you, sir?"

"Definitely," I said, assuming the fates would want to keep me around for greater evil than a mere death from flu. Christ, I hated winter.

I got home, wrapped myself in blankets, and made the usual futile effort to sleep. For a long, indefinite period I fought off hallucinations and ate as much as I physically could. Some of the visions were of Marty, others not. The next coherent thing that I remember was the phone ringing Friday morning. Saracen was wondering where in hell I was when they were about to turn Morlock's gonads on.

I taxied to the office, wearing just about every piece of clothing I owned, and found the others waiting for me.

"You look like hell, Steve," Saracen said.

"I feel like it. Can I have a few words with the patient before we get started?"

"I should damn well think so. This is your show."

"Private?"

"What in hell for? This is government work, and if you two sickies are going to cry on each other's shoulders, let's at least have it on tape."

"That might not be far from the truth. Look, I feel awful and I can't explain things real well right now. Just trust me on this. This whole deal has been subjective all along, whether we've admitted it or not, and I just have a hunch Morlock may want a little privacy." Hunch, my ass, I thought.

"Okay, okay." He turned to the grad student on shift. "Kill the damn bugs in Morlock's room." Then to me, "It's your show."

Saracen was the boss, and I could tell I was pushing a little too hard, so I smiled graciously and said, "Thanks."

Looking down at his watch, Saracen said, "Don't mention

it. But let's get going, huh?"

Morlock's room was about the size and shape of a dormitory single. He had an expensive bed, as much to cushion his delicate circuitry as for his comfort, a few shelves, a desk and two chairs. The walls were off-white and looked okay in the summer, but now they were taking on the color of institutional dingie. He was propped up in bed, actually writing in longhand rather than typing or using a direct computer input.

"A sonnet?" I guessed.

"Oh, hi Steve. Yes, I've just started. I can finish it up in a couple of minutes if you're interested."

"I would prefer to think that I'd distract you if you did it now. No, I'll side with Coleridge and take the fragment—if I may?"

"Of course." He handed me the paper and added, "I figured I might as well do this properly. I'm sure to somebody it will be a nice piece of hard data."

"Well, it's a poem to me, ace." He had only gotten as far as the first quatrain:

*Lay down your ghosts, lay down your past, today
Strides bold to block your path. A parting glance
To rivers dried, to paling sun, and then
Forward ride and lift high your broken lance.*

My eyes stung a little bit, but then they'd been hurting all morning. "Can I keep this?"

He nodded. "Do you like it?"

I read through it again, folded it, and stuck it in a pocket. "Well, Keats it ain't." Then, smiling, "Yeah, it's okay."

"It's after Petrarch, actually, with the martial imagery. I was going to continue the internal rhyme scheme through the next verse, then change up for the sestet."

"Somehow I don't think you're going about this right. If memory serves, Petrarch wrote to a lady, not to a textbook."

Morlock gestured at the TV eye overhead, as I had rather expected he would sooner or later. It was a signal I had programmed him to use.

"It's off," I said. "Go ahead and tell me."

"Well," he said, and I wasn't sure if he was eager, embarrassed, or just trying to phrase it properly, "it's more or less dedicated to the student that watches the boards Mondays and Wednesdays." Yes, I remembered her, vaguely. Barbara's her name. I'd spoken to her before I went home the other day. "She is attractive," Morlock went on, "and as I understand it these decisions are somewhat arbitrary, yes?"

I chuckled, at the last moment keeping it from turning into a cough.

"Am I being foolish?"

"No, I think you're doing just what you were supposed to do I didn't mean to laugh, but you caught me below the belt, there. No, I think you're very right, kid, and I'm getting a little worried about what you may tell me—us—later on."

"Steve, I think you should sit down. You are starting to wobble."

I took his advice, noting that my knees had indeed gotten very weak.

"I refrained from saying anything earlier, but it seems you are quite ill. Shouldn't you be in bed?"

"I will be soon enough, but right now this is more important. Tell me, subjectively and off the record, how you feel."

"Not bad at all, actually. I was afraid it would be much

worse. As it is, this is all rather fun, in a sense. I find myself being quite self-centered and indulgent. I'm responding differently to familiar stimuli, and I've rather enjoyed processing the new data."

"You don't seem as gloomy as you had thought you would be."

"Oh, I feel a bit gloomy, yes, but in a rather insulated, masturbatory way—if I use the term correctly."

"Yes, you use the term correctly."

"Excuse me, Steve, but if anyone seems gloomy, it is you."

"No, I'm just... digesting all this. Well, do you think we should go ahead?"

"I think so. They seem to have interviewed me rather thoroughly, and my condition has been stable for over twenty-four hours. And, since this is off the record, I'm rather curious to see what will happen in the next few days."

Saracen was waiting as we came out. He slipped me a dirty look. I shrugged and decided it would be better not to smile. Morlock was sort of pleasantly despondent and gave us no backtalk as we strapped him down again on the operating table. No new program was run this time, just a few circuits turned on that had been tested (*in vitro*) and installed months before. The operation was smooth and precise, and like before, we expected no trouble. If the planning is good, the execution is always a snap.

When it was over, I felt the beginnings of a relapse coming on, and I quickly made my excuses to Saracen. There was nothing more for me to do that day anyway, except to remain on call. As I was leaving the building I noticed the girl that Morlock had written the sonnet to, and realized for the first time that she actually was quite attractive. Tall, solidly but not heavily built, with medium-blond hair and a healthy, athletic sort of look about her. Not my type, really, but then my type had never brought me anything but grief. When she saw me, she came over and asked me how the operation had gone.

"Fine, fine," I said. What was her name? Oh, yes. "By the way, Barbara, I may be betraying a confidence here, but I think Morlock has a crush on you."

It was a standard joke under the circumstances, and I'm sure she must have heard a thousand variations of it. But something in my voice must have tipped her off.

"Does he really?" Her eyes widened, and then narrowed as she smiled at me. "Thank you, sir, I'm glad you told me."

She had a kind of wild look in her eyes that almost made me say, "Don't encourage him." But then I figured what the hell. Morlock was equipped for anything, and it wasn't the sort of service we could have come out and asked for. What the grant people didn't know...

I got back home before I collapsed, sweating like a Derby winner, and cursed winter for as long as I could stay awake. The relapse had become fact, and the next two days were like the ones before. In moments of lucidity I wanted to go down and check on Morlock, but common sense told me that I would be no help if I had to be hospitalized. I phoned in twice a day and got the same answer each time—metabolism a little lower, misanthropy a little stronger.

sickness had given me cause enough for self-pity.

I was having one of those dreams when Saracen called. You know, one of those. When you wake up you realize that it was all shadows and murmurs, but while you were asleep you knew damn well who that shadow was, and what she was saying, and you really believed she had come back and that everything was going to be all right again. It's tough to wake up from them the first few times, but after a while you just get glad they're over. I was even happy to hear Saracen's voice.

"Steve, how well do you feel?"

"I'm okay, boss, honest, I just didn't want to push it too hard today."

"Can you come in?"

"You sound like it's serious."

"It is, but if you're not healthy, we'll put it off. Or find another answer."

"Okay, I'm healthy already, but all this sudden concern is driving me up the wall. If you don't cut out the suspense you're going to put me back in bed."

"It's Morlock, as if you hadn't guessed. He's gone mental on us. His metabolism is depressed as hell, he's burning circuits and he says he won't talk to anybody but you. Jesus Christ, I feel like Frankenstein and his monster taking orders from a little girl."

"And I'm the little girl. Gee, thanks."

"You know what I mean, Steve. This has got me upset as hell. Well, can you come down?"

"Yeah, on my way. Let me get dressed and I'll be right over."

I squandered another cab fare, afraid to even think of the amount of money I'd spent in the last week. Once at school, I felt like Dr. Kildare at the Black Plague. People with desperate looks on their faces came running up to me, carrying bits and pieces of the story, and by the time I got them all calmed down I knew no more than I had to start with. But through it all, weak as I was, I could not ignore the fact that I was the center of attention. No matter how much Saracen's name had been in the headlines, for this one moment Morlock was my baby. And it brought something out in me that surprised me, that I'd even begun to doubt was there any more.

A modest mob was milling around Morlock's door, trying to be quiet. I shouldered my way through, then stopped when I saw Barbara there. A couple of technical types were standing beside me, still listing the various circuits that had gone haywire. I motioned them to shut up and walked over to where she was waiting for me.

"Should I come in with you, sir?" she asked, and I could tell from her despondent expression that she was holding herself responsible for the whole thing. Which, in turn, made the reason pretty obvious. Christ, I thought, why wasn't she just transferred?

"No," I said, "but stick around a second." I turned to the crowd and felt that strength come upon me again, the readiness to take care of whatever I had done and patch it up as best I could. "Okay, everybody scram! Now!" I have to admit I did enjoy it. I knew even then that it was going to cost me everything to get out of this mess, but for the moment the sight of people scurrying at the sound of my voice was enough for me. The room cleared except for Saracen, Barbara, and myself. "I'm afraid I mean you, too, boss."

Saracen had a sense of humor, and he needed it, but his face told me I had gone a long way too far. He stood blankly for a second, trying to decide how to gently lower the boom. I

BY THE THIRD DAY I was well, if a little weak, and I practiced walking to the kitchen and back several times, stuffing myself while I was there. A bottle of White Horse sat over the drainboard, but I was able to stare it down with enviable ease. I knew that when I got my strength back I would be at it again, but for the time being my

didn't give him the chance.

"Look, boss, you need me right now, and you either have to let me play this my way or scrap Morlock. I didn't plan for this to happen, no matter what you think, but it has happened, and I'm the only boy who can straighten him out. So get out now, and we can ask each other questions afterwards." Saracen held his position a split second, then turned and walked out of the room. I had not expected to shout at him or order him around, but once I got started it had all come out. Later, when I had time, I was going to have to think about that.

I walked over to the console and switched off every microphone, TV camera, and tape recorder I could lay hands on. Then I turned to Barbara.

"Look kid, I don't care what you did—" she started to open her mouth and I cut her off, "—I don't care *what* you did, and I have a pretty vivid imagination. You know enough to realize that a computer can only do what it's told to do, and the same rule applies to Morlock. I wrote his program, and anything that's wrong with him is *my* fault and no one else's. Now I need your help." I was long past being surprised at myself. I was playing it, as they used to say, fast and loose.

Barbara nodded at me, and I could see a wave of relief go through her shoulders. Right now the most important thing is that I talk to him and that we are not overheard. Which means I have to trust somebody, somebody to sit out here and keep Saracen, or anybody else away from that board. Which means you. And if you can't keep them away, flash the overhead light in his room a couple of times to let me know. Okay?"

"Okay, doc. Thanks."

"Forget it," I said, and before I could let myself think about it, I walked into Morlock's room and shut the door behind me. Fast and loose.

"Hello, pal," I said. "It looks like I've screwed up."

He looked up, nodded, and made a vague gesture at the TV cameras. I shook my head. "No, just you and me."

I was still riding high on the adrenalin stimulated by the scene in the hall, but even so I could not overlook Morlock's condition. Before, it had been easy enough to tell when he was putting on a human expression for our amusement or to con us into something. But the pain on his face now was real, and I no longer cared about being a hero. I just wanted to help.

"I'm glad you came, Steve," he said. "I feel like I can talk to you. There's something sick and twisted inside of you that won't let go." I winced at the harshness of his phrasing, but I couldn't deny it. "I know what you feel," he said, "and I know that you will understand me."

As if it had been a cue, those words broke something inside of me and I let the self-pity and misery rush over me, maybe for the first time. I sat down and let it happen, and when the worst of it was over I asked myself if this was why I had done the whole experiment, just to hear someone say that he *knew*. If so, then it was worth it.

"I thought at first," Morlock said, "that it was you that I loved. The girl was something else, something more conceptual than real. But when they—"

"Turned your gonads on."

"—turned my gonads on, I found the idea illogical."

In spite of myself, I was fascinated. I had probably destroyed Morlock, my only real friend, thrown away my career, and otherwise made a fool of myself for this revelation, but even in my pain I wanted to understand all of it that I could.

"Illogical? How?"

Lewis Shiner

"Physiologically, I am heterosexual, and as you know, free will has little to do with such things. And without the sexual component, once the hormones were in operation, the idea of love simply no longer applied."

For a moment I wished the recorders were still on. Even if all Morlock told me were fairly obvious things, the source still made them important. But I knew as well that we were barely scratching the surface, and that things lay ahead that I would never want on tape.

"The last few days have been very...interesting," Morlock said, and flashed a smile so pathetic that it lifted my spirits when he stopped. "I have at least satisfied the curiosity I spoke to you of before. And I think I have the answer you wanted me to find."

"Answer?"

"Yes, it reduces to that, does it not? Only you and I know what was really in that program you fed me. No single other person had the time to trace down all its subtleties. On the surface, the question was simply, 'what are the psychological parameters of romantic love?' But the real question was more personal. You want to know what's wrong with yourself."

I was beyond pain, and I could not dispute a computer, particularly one who was my best friend. "All right," I said. "You've got me. What's the answer?"

"The answer to the superficial question is very simple. Love is cultural."

"That much I could get from an anthropologist," I said, feeling put off, "and I want to pursue that later. But right now I want you to cut out the suspense and let me have the rest of it. Both barrels, now."

"It's the same answer. One of the hypothetical cases you gave me was yours, no, it's obvious enough, and all you have to do is apply the general to yourself. For instance, tell me something about Marty."

"She was beautiful."

"Something a bit more profound, if possible."

"All right." I closed my eyes for dramatic effect, though it was hardly necessary. "There were little secrets she had that she never told me. I can remember once, it was in the spring, I think, and we were lying in bed together, and she just started giggling. It must have been about two a.m. I asked her what it was, and she just said 'nothing' and giggled some more. Yeah, I know, real high school stuff. But I was a sucker for it."

"Exactly," said Morlock. "The sort of love we're talking about occurs when one party, in this culture the female, is controlling the situation. That's why every culture that has a romantic tradition has one sex identified as pursuer, the other as pursued. In our society the female is ideally the farmer, and man the crop. She is to provide him with the essentials—sex, uncertainty, equal parts intimacy and secrecy—then subside off the blind passion she has created. She shapes it and directs it, begins it and sustains it."

"But she just can't kill it off," I said, staring at the floor. "No matter how much she changes you're still stuck with the memory of what she was, and even in understanding—even in understanding there isn't any peace." I raised my eyes to Morlock. He had not moved since I had come in. "And afterwards. People turn into what they love. They always have. And if you love that oppressor, that director of emotions, then that's what you turn into. And then you can't love what you used to love any more."

"She was everything you wanted her to be, Steve. I know."

[Continued on page 70]



JUDITH RANDALL SINGER had the unused, indoor look of the scholar: thin limbs, doll body with near-translucent ivory skin, and large liquid brown eyes that went black when she was angry or exhausted.

Young as she appeared, there was no trace of youthful uncertainty in her manner, but rather a disconcerting composure and purpose.

She spoke a little of the polyglot Mrikan, a smattering of Uthian, and was well-acquainted with the Old Language, though opportunities to use it were almost as infrequent outside the City as the concentrated verbal shorthand employed within its walls. No one learned much about her, but she had the knack of drawing out the unusually reserved coveners to entertain her with the old song-stories they passed down from generation to generation.

She was always most eager to hear the traditional tales of the Girdle of Solitude, an ancient, fabled garment rumored to exist in dim, pre-coven times. According to legend, it bestowed the gift of invisibility on its wearer. Judith reckoned the Girdle as fact, a memory with raveled edges frayed into myth. And always, when they sang to her of the Girdle, the tantalizing refrain ran through every song—

In Lishin, in the west

In time, the sight of Judith became less of a novelty, and the uncurious Mrikans turned to business: the wagons were coming east.

With spring, Lori stirred sleepily at the start of its trade year. Raw plank shelves were crammed with goods from the north and east to wait for high summer and the first wagons from the forest covens bringing fresh and boiled fruits, vegetables, raw wool, poultry, and the priceless Shando apples to be pressed into sida and sold to middlemen dealers. From late summer until first snow they came. The single main street and its few tributaries roared with commerce, with coveners and middlemen alike whoring themselves cheerfully in a welter of muddy, booming profit. Then Lori stank of dung, urine, vegetables, meat in various stages of preserve or decay, sweat, rawhide, and dirt. Lori grew dustier and seasonally richer, sandwiched as it was between the covens to the west and the silent City to the east and by the sea. Day and night the streets seethed with volatile, black-haired Wengen coveners, fish-merchants, the border guards billeted in the nearby barracks, bored prostitutes in stained robes combing stiff hair in front of split-log cribs.

And through it all moved Judith, listening to the rapid, slang-slurred argot, rubbing its rhythms into her mind.

In late summer the first wagons of the Karli arrived. The Karli were northern cousins to the Shando; the two covens had always been close to one another. It was still difficult to understand them, since much of their communication was unspoken lep. The richest and poorest of the Karli looked alike; beyond the cord-belted tabard and white-hilted knife, or thammay, of the masters, they had no status symbols. Most Karli were simple sheepherders, supremely ignorant of the world beyond their convenstead, but they had a capacity for joy and shared emotions that woke in Judith curious feelings of envy. City-bred, used to a life of study and solitude, she listened hungrily when they congregated at night and the old songs were begun by a single throat to be taken up by twenty more. Then Judith saw the soul of the Uthians. The dance might last half an hour or more until their eyes glazed and brown faces glistened with sweat as they sought through the unceasing motion for something beyond Self, touched it in one another, and grew calm again.

Parke Godwin
and Marvin Kaye

MASTERS OF SOLITUDE: Part One

According to legend, it
bestowed the gift of invisibility on its wearer.



When summer cooled and fall stole on, the Shando apple wagons came and the trading accelerated in pitch and intensity. One of the trains belonged to a grizzled monolith named Jase who did not so much stand in Korbin's store as wear it. When he leaned over the counter towards Judith or Korbin, Jase was a benign mountain shadowing an insignificant valley. His apples made him rich, and his woman was a master of the circle. Their greatest pride—and sadness—was their son, Garick, left outside by the wagon.

"Good farmer," Jase muttered over the lip of his jug, "but he couldn't raise a sneeze by magic."

Judith regarded Garick with idle curiosity. He was about nineteen, sun-burnished, with a crest of thick brown hair, square mouth, and laughing, intelligent eyes. She almost collided with him as he rounded a wagon corner.

"Better watch where you walk," he drawled down at her. "You so little, someone gonna step on you."

Though Garick was a farmer like his father, Judith began to realize there was more to him than that. He visited her shed often, watching hungrily as her pencil flew over the endless pages of notes.

"Where you learn that, Jude?"

"Writing? A long time ago."

"Could I learn?" He asked it lightly, but she heard the covert longing.

"Of course you can learn."

Garick peered down at the strange symbols with keen interest, then at Jude. The interest did not lessen. "You could learn me lots."

She stopped writing and rested her elbows on the table, suddenly aware of Garick's proximity in a new and oddly pleasant way.

"What... what would you like to know, Garick?"

He thought on it. "Everything."

Then Jase bellowed from the wagon. Garick stopped in the doorway, a playful grin on his face. "Jude, you got a man here in Lori?"

It caught her completely by surprise. "What do you mean, a man?"

"You with a man?"

"No," she said simply, curiously. "Why should I be?"

Her answer seemed to puzzle him in turn. "Don't even go out on the hill?"

"What hill?"

Jase called again. Suddenly Garick stepped to the table, lifted Judith's small chin with his large brown fingers, and kissed her.

At the contact of his hand, she stiffened. *City people don't touch!* But Garick, she realized, didn't know that. She relaxed, neither objecting nor responding, but rather experiencing the strange sensation with interested detachment, aware that this was the peculiar coven custom she'd read about.

And then, for the first time since she was a child, Judith stopped observing and cataloging data. In an alien surge of emotion, she parted her lips beneath Garick's and encircled his shoulders with her arms. After a moment, he stepped back and studied her with wonder and pleasure.

"Well, Jude," Garick said as if arriving at a decision. He turned and hurried to join his father.

Judith stood in the vacant doorway, staring. She was smiling. How curious, she thought, in the quiet solitude of the City, she'd long ago charted the male-female relationship, but it was so much dry knowledge, lore well lost, words on

paper like the ancient love ballads, flame entombed in the ice of time and tamed by denotation.

The reality is different. It can't be communicated, she realized with something of a shock. It was a small but vital chink in her City breeding.

JASE JOINED A LARGE, combined wagon train to make the homeward journey. Some of the wagons would turn north for Karli at the bend of the Tomik.

As they prepared to leave, Judith decided she'd learned as much as Lori could teach her, so she asked to go with them part of the way. Her decision—she reassured herself—was only incidentally determined by the fact that she could be with Garick a little longer. She strapped up her pack; happily, Garick hoisted her onto the wagon seat beside him. Though her motives were a puzzle, he loved her openly, admired her courage, and knew her for more than a little mad.

"How long you be in Karli?" he asked.

"Until spring."

"Karli ain't half of Charzen," Garick said proudly. "Come on home with us."

"I would like that," she said honestly, pressing his arm. "But I have to go even further than Karli after that."

"Where?"

"To Lishin."

A sudden, pointed silence fell on the folk in the wagon. Heads turned to regard Judith in fear and astonishment. Garick's eyes widened. "Jude," he whispered, "that's *Kriss* country."

"I speak the language well enough. They're coveners like you, aren't they?"

"Jude, you just don't know. Nobody lives in Lishin. It's dead."

"Still," she persisted, "I have to go."

"Look." He tried to reason, difficult since he couldn't leap or share with Jude. "Even if you find men damfool enough to take you there—and you won't—it's clear across Blue Mountains, up and down, up and down, all the way. All bush, like to kill horses, bad enough for hunters—"

She patted his hand. "Drive the wagon."

"Jude—"

Jase waved the move-out. Garick scooped up the reins and smacked them in frustration. "Lishin!" he muttered, still unable to believe it.

"They have a dead god," Garick said, the horror of otherness audible in his voice. "They love death. They sing about death like it was a woman."

AS THE TRAIN CRAWLED its northwesterly arc along the Tomik River, Judith learned more about the color of the coven life, of the lush, natural setting which bounded and defined them. Mornings and evenings were crimson over the forest, the air cool and delicious. Night was a new thing to her, total darkness beyond the island of fire-flickered wagons, filled with sounds that frightened and woke her constantly. Once, she started awake at a weird forest call. She hadn't moved, merely opened her eyes, but Garick's hand closed over hers.

"Old owl," he murmured as it sounded again. "Don't be scared."

"How do you always know when I'm awake?"

Garick turned over and lay close, his arm around her. "I'm with you." It was the only way he could explain it, and Judith

could not grasp his meaning.

"Why can't I do it?"

His fingers wound about her hair and temples. "You think all up here," he tried lamely to explain it.

"Everyone does," Judith countered.

Garick sighed with the complexity of it. "City is strange," he murmured. "What they do all the time?"

"We think," she said. "We study. We learn."

"Then why'd you come out?"

It was a long time before she answered.

"I... I began to wonder," Judith began carefully. "And there's a thing, a—kind of weapon. In the wrong hands, it could endanger everything the City has worked for all these generations."

"You 'spect it's in Lishin?"

She nodded.

"How you know?"

"I don't. It's just an idea I have."

Garick noted the weariness that crept into her face whenever she tried to speak at length, as if the effort of reducing her thoughts to the level of a covenant sapped her strength. He felt a sudden rush of anger at the indefinable wall between City and himself. Supporting himself on one elbow, he struggled to express the old rage to Judith. *Why?* Why did City shut itself in? Why did it send merks, hired soldiers, to police its borders against the coveners? And why the Self-Gate, stronger than any covenant magic?

"Solitude is the way of the City," Judith said a trifle sadly. "Sufficiency unto one's self. The Self-Gate, as you call it, is a method of preserving the plan of absolute independence. The City keeps you out because other ways of life are inimical to everything City represents." She sighed. "But now I'm not so sure. It's clear there are many gaps in the knowledge we thought we possessed about the covens. Our theory of language, for instance—and it's an important instance—doesn't include the *lep*—"

But Garick was clearly confused. Judith smiled, stroked his cheek. "There, I touch you. That alone, touching another human being, is unheard of in the City. But Garick, I'm going to tell them. In writing, in pictures, so much that I've learned, everything I can absorb about your people. There is *so much* missing. I feel it... now... within me, too."

She touched him again with a subtle urgency. Her hands pulled his mouth down to hers, the way he'd done once, and in the new half-understanding between them they melted together with the beginning of wisdoms, and in the midst of the glowing new experience, Judith laughed at the tickling of Garick's beard.

THE LAST NIGHT before the wagon train was to divide, Judith woke near dawn. With her now-chronic kidney problem, she had to leave the wagon. The moon was low, sunrise not too far away.

The group was camped close to the bend of the Tomik, with the river at their back and open, rolling country on three sides. The morning wind rustled the trees and Judith enjoyed the last of the shimmering moonlight on the water, pausing where she was to watch it fade imperceptibly in the stillness. She turned back to the camp—and stopped, surprised.

Still as the moonlight itself, the camp had come alive. No word, no sound had been uttered, yet the coveners, every one, were awake and wary, responding as if one, like a flock of birds wheeling to avoid a swooping predator.

She found Garick slinging his quiver.

Parke Godwin/Marvin Kaye

"What is it?"

"Don't know yet. Get in the wagon."

She clutched at the knife he thrust into her hand and crouched just behind the seat to watch Garick and the others. Quietly, the whole group shifted to a position of defense, some lighting torches from the fires. A few formed a wide-spaced perimeter around the camp, unarmed save for the torches. In the center was a larger group with bows, Garick and Jase among them. They were silent now, waiting, but still Judith could detect no danger beyond the firelight.

Later she learned from Garick that the outer defense was a circle of masters, men and women who wove their combined power into a mental wall. Somewhat the opposite of stymagic and more lethal, they called it *whitebrain*. If anything got through, it was trapped helpless in the circle, its mental functions blanketed with numbing force, and dispatched by arrows. But, Judith learned, they relied always on their magic first.

Shoulder to shoulder, arrows nocked over their bowstrings, Jase and Garick strained their senses into probes that groped to touch and shape the thing they could not see. The leap passed between them and on to the others, and all searched.

?

Dogs. Wolf would howl. Packdog's too smart.

Cowan hunters?

Masters would read them. Too far east anyway.

Dogs.

The same intelligence traveled swiftly through the outer rim of masters. They waited, the hush deepening. The fire played shadows over their backs. Then—

Coming. Now.

Judith heard a low sound, a snarled chorus that lifted the hair on the back of her neck. Twin points of firelight glinted, reflected in two, three, a dozen pairs of close-set eyes, weaving back and forth beyond the circle of masters. *They have no weapons. They'll be slaughtered.*

The dogs advanced in a silent rush, half a hundred of them behind the leaders, huge bounding shapes of darkness torn out of the shrouding night. The wild creatures plunged to within a few yards of the circle and faltered, skidded to a halt, sensing the invisible barrier. Torches thrust out at them, forcing them back. Slowly they retreated until they were only fire-darting eyes.

Again they came, this time hurling themselves in a mass against the mental power, wall against wall. A few, the strongest, penetrated closer to the thrusting torches, wobbling dizzily as the power singed at their tiny brains.

The animals neither howled nor challenged with any sound save a continuous low growl—like an idling motor, Judith remembered afterward.

Their tactics changed. Without knowing what stopped them, they could nevertheless sense where the force was weakest. They concentrated their energies there. The line held, but the dogs won more ground, coming nearer. Again and again the torches jabbed out at them. One man's arm was slashed as a red-eyed shadow leaped out of nowhere to buffet the fraying edge of the power circle.

Judith began to see them now, massive, nondescript mongrels, some of them three feet high at the shoulder, loping forward or retreating with malevolent, purposeful intelligence to seek another chink in the wall. The strain of concentration was telling on the masters. A young girl swayed and would have fallen, but the woman next to her caught her arm.

The dogs immediately sensed the small gap in the invisible armor. In a body, they wheeled and rushed, hurling themselves with silent purpose against the flaw in the power, two tearing at the woman, several others breaking through in high leaps to the center before the wall of will could knit up again.

The girl keened with fear and rage, flailing at the dogs with her torch and thammay, trying to force them from the downed woman, who uttered a single wail of pain and terror. The animals staggered away from the fierce attack of the girl, pain hammering at their skulls as the masters projected redoubled power at them.

The woman lay still.

Judith's knuckles went white around the knife handle. She saw the dogs bound once more against the circle, some few breaking through the attenuated power-cast only to falter drunkenly in the wash of its force. Their snarls pitched higher into a soul-freezing shriek as their senses went white, torn asunder by the angry magic of the masters rallying with the full force of concerted fury.

Mad, half dead already, the animals charged anything that moved. Garick shot one—and then went down under snapping jaws as a huge grey beast hit his back.

Jase!

Drawn on another dog, Jase needed a precious instant to make the kill. He loosed the shaft and turned, but even as his muscles bunched to spring, a small figure hurtled at the dog with a cry. Judith pumped the knife up and down, slashing the dog in weak, futile strokes, not deep but enough to slow the dog's attack until Jase's blade severed its throat.

The circle was closed again. Beyond it, the pack was at last discouraged. Its sallies were weaker and more disorganized. Wisps of early morning fog laced across the open ground, and the dogs retreated further into it as arrows struck among them. Then the fog swallowed them up. They were gone. No sound rippled the morning calm except the weeping of the girl huddled over the dead woman.

Jase helped Garick to his feet. "Jude did it," he said gratefully. "Couldn't move in time."

Garick and Judith regarded the dead dog at their feet. Her hands were stained red to the wrists.

"Who... who's crying?" Garick stammered, panting.

"Young Jenna," said Jase. "Dogs got her ma."

Garick clutched at Judith's thin arms. "Jude, your hands. Where—?"

"Not mine," she swallowed with difficulty. "Not my blood. The dog's."

She wiped her hands mechanically on the beast's matted hair and then knotted over, gagging. Garick held her while she was sick.

THE SHANDO BURIED JENNA'S MOTHER under a Willow that leaned out over the river, respectfully but with little ceremony. There was more attention paid to the gangling, red-haired girl than to her dead parent. Jenna stood close to Garick—a little too close, Judith thought. The mother's thammay and coven necklace were saved for Jenna, and each was placed in her hands by one of the masters.

"She comes again," they soothed her. "So do we all."

Judith heard but did not understand. Garick tried to explain that it was no idle comfort. The world and life were all, death a brief sleep. Friends or family were "born again in each other's sight."

Judith listened but could not believe what he was saying. It was not a case of rejecting the coven philosophy; rather she wondered how they ever could have come to accept it in the first place. She saw how reverently the hallowed objects were offered to Jenna, already a master herself with power to protect her people—the knife, the necklace, the precisely-knotted cord belt—and, with a new emotion Judith didn't stop to analyze, she saw how Jenna held to Garick's arm as he led her to her father's wagon. She had been with him before Judith, Garick said—as a simple fact with no trace of boasting or attempt to inspire jealousy. Like his people, he was so transparent as to be impenetrable.

Garick seated Jenna beside her father on the wagon and took the man's hand. "Born again," he said.

"To the Shando," the farmer murmured, then turned a canny glance at Jenna. "Good girl here, Garick. A master."

"That's true," Garick knew what was coming.

"And you been with her a while; you two good together."

Jenna leaned over the seat to him. "Garick, come see me at the Samman fire. I'll make you happy again, the same as Sinjin." She saw where his glance shifted. "And all the other times."

Garick tried to share it with her; that was before, that was pleasure, being out on the hill together. But the other made him grow, stretched and challenged him with lessons he hungered for, deep things.

City girl?

Yes.

Then why she leaving? Why do want her so much?

Garick tried to break away. "Karli going north." He nodded with the respect due a master. "Got to see them."

Jenna persisted. *I'm now. She's maybe.*

Confused, Garick stumbled off. He saw the friend he wanted, beckoned to him, took the youth over to the wagon where Judith wrestled with her pack.

"Jude, this is Moss of the Karli." Judith saw a husky blond youth, one of those who stood in the inner defense with Garick the night before. "You'll stay with Moss and his ma in Karli. They just like Shando," he squeezed his friend's arm, "just smell of sheep now and then."

Moss chuckled. "Kept your ass warm more than once, them sheep. Y'all didn't mind then." He turned to Judith and scooped up her pack in one broad hand. "Garick says be friends, we're friends. What you called?"

"Judith Randall Singer."

His eyes crinkled merrily. "All that?" But he glanced at Garick. *City?*

Mine, Moss.

Dumb. Jenna's a good woman, a master.

Well, I ain't. Never be one. But I pick my own woman to be with.

You say goodbye now, boy. She going to Lishin. Won't come back.

Garick grasped Moss's hand. "You and your ma take good care of her."

Moss sighed; Shando had good hearts but very thick heads. "Do what I can for her," he promised, "long as I can." Tactfully, Moss strolled away to the far end of the wagon. Garick put his arms around Judith.

"You be in Lorl again next summer?"

She shook her head. "I'll be going home."

It hurt him. "Back to City?"

"There's so much new work for me to do now, Garick."

"But I'll be in Lorl after Lams again. Wait for me till then,"

he urged. "Wait for me at Korbin's."

"Garick, I can't." She tried hard to explain, but he was trying to kiss her.

"Just till after Lams, Jude. Wait for me."

"I have to study. I have to put everything into the synergizer." She was still protesting when he lifted her into his arms.

BY SPRING, JUDITH FELT as ready as she would ever be for the hard trek to Lishin; more than that, she felt she had earned it. But it was a different woman who walked her horse beyond the last cabins of the Karli covenstead after Leddy fire. Garick might not have recognized her. The ivory skin was chapped, blistered, healed and toughened against the knife-edge wind. Her hair, always short, had grown long and stiff with dirt, gathered back in the hide strip-and-pin fashion of coven women. Her hands were hardened from work, nails broken and yellow, fingers calloused and insensitive from the pinch of frostbite while digging and sacking potatoes.

The bitter cold weather took its toll, but Judith's own stubborn courage cost her more. She bent double with cramps from trying to digest the coarse natural food. She picked lice from her body during infrequent communal baths, at first horrified and then used to them.

When not sharing the common labors, Judith treated the vitamin deficiencies of winter-hungry children, salved injuries from her own dwindling supply of medicines, poured her own vitamins down the throats of sickly infants, watched them live or die, helped bury them, helped bring new life from the wombs of their mothers, distributed her precious antibiotics to the bedded women, and saw them return to work two days later or writhe in the terminal delirium of childbed fever, defeated by the chronic bone weakness that blocked the focus behind the unyielding pelvic arch.

She filled dozens of pages with close-packed notes, sketching the parameters of a people that the City had forgotten, had never really known. She observed their language, philosophy of life and love of it, and exhaustively described the self-discipline of the masters as they protected and marshalled their formidable mental powers.

And yet, for all her study and observation, Judith could not bridge the final gap and think like a covener. She defined and dissected, but always at a distance.

For their part, the coveners understood even less of Judith. She was beyond comprehension, not worth the effort of trying, for though they liked her, she was City. Brave beyond her years and child-stature—that, they rendered her—but they also knew she must be half-mad. Going over Blue Mountains to Lishin, there was no other explanation.

A young Wengen hunter was found, storm-caught and badly frozen. He revived with cheery gusto after his rescue—an ebony-haired, brown-skinned dynamo of a man who talked with his hands and poured the gossip of the northern covens, the Wengen, into everyone's ears. His name was Gannell, and he was a born story-teller. But along with his news, he also regaled the Karli with his own people's versions of the traditional song-stories, phrasing out the lines in the characteristic glottal-stopped Wengen that scattered r's and d's like dying leaves down the whirlwind of sound his vibrant voice produced.

Gannell sang of a time before the covens etched their sigils in iron, before the City shut its gates:

Parke Godwin/Marvin Kaye

*And all men had the power
To ride the sky, ride high on the wind
Like the forest path to Lori*

and the masters fought a hopeless war against an inexhaustible enemy. But before their inevitable defeat, the greatest of the masters built a house wherein they devised weapons of surpassing subtlety and dreadful purpose.

And the house was in Lishin, in the west.

Here it was, according to legend, the origins of the Self-Gate might be traced, and the one most fearful weapon was created: the Girdle of Solitude, with which a man might walk anywhere in broad daylight and be undetected, even with the deepest magic.

*And the Jings came near to Lishin.
Run, old Callee, run.
Put on that belt called Solitude
Before the day is gone.*

*The masters named you top man,
They know you'll do what's best.
Ain't no sense to stop, man,
In Lishin, in the west.*

The timbre of his voice altered subtly, and the raconteur merged into the personality of his hero.

"The Jings chase me hard," whispered Callee in the guise of the covener Gannell. "I hide in a cave, but I hear them tracking me sure by my footprints. Now, I say. Now it's time to wear old Girdle of Solitude."

Callee-Gannell pantomimed a peculiar buckling gesture—lowered hands to his sides, became stock-still. A hush fell over the rapt coveners; they scarcely breathed. Then, without moving his head or parting his lips, the resurrected hero murmured:

"Here they come... close... close... man, I do not move." Silence.

Suddenly Gannell-Callee sneezed, and with the violent sound, broke the rigid posture and instantly metamorphosed into a crouching Jing enemy.

"What's that?" the Jings asked, fearful.

"That, that, that," Gannell chanted, an echo.

"Who are you?" called the Jings.

"You, you, you," old Echo replied.

The Enemy laughed. "I see there's no one here—"

"Here, here, here."

"This is our country now."

"Now, now, now."

The Enemy was cocky, triumphant. "We will rule this land a thousand years."

Silence. The Enemy caught his breath.

"We will rule this country," he repeated, somewhat shakily, "for two thousand years!"

"In that case," said Echo, "you won't need me!"

THE ASSEMBLED KARLI ROARED at the tale. The last line of Gannell's story had infected upward in a kind of rueful half-question, a good-humored irreverency that delighted the Karli who had never heard the version. The Jings, of course, never found Callee or the Girdle of Solitude, though Callee, like all heroes, was born again to the Shando or Karli or whatever coven was singing his tale at the time.

Meanwhile, Judith returned to her lodging and rummaged

excitedly through her notes. She'd heard the tale of Callee time and time again at Lori, but Shando and Karli rendered the name into common Uhian, the way it was written, and it was sounded as *kah-lee*. But the Wengen dialect changed, or perhaps preserved it as *kaw-lee*, and even more important was the vestigial *muh* that Gannell tacked on the beginning of the name.

She found what she was looking for. Long ago in the City, Judith noted one of the few historical names to have survived before the time of the Jing conquest and subsequent recording of the land:

Henry MacCauley.

The synergizer still preserved reports signed with his name on its memory banks. Always, the reports were between a military base of some sort and a trio of experimental laboratories, none of which were pinpointed by location.

It was Judith's contention that one of the four locations could be found in Lishin.

Her price for guides soared to twenty-five krets, half in advance. It was more than young Moss could resist. The advance alone would set him up "good as Garick" when he took a woman and a household of his own. Judith needed a second guide, and the offer was snapped up by the restless, energetic Gannell. The voluble Wengen had lost his gear and pelts in the storm that almost took him.

"Hoo-ee, tell them Kriss we're coming," he jammed his pack together, "gonna die rich after all."

JUDITH SWAYED ON HER KNEES. She panted. Her throat was dry, her head buzzed with the strange lightness that was partially due to the altitude of the mountain path on which they clutched their way. Objects seemed to float in front of her, insubstantial wraiths. Moss hailed her with that cautious hunter's whistle that could sound like any forest fowl he chose. She stumbled, crept along the dirt path towards them. The deep ruts of the trail ran upward and forward and then she saw where Moss and Gannell waited, dwarfed by a sheer blue panorama of sky. The brush dropped precipitously away on her right and she saw the grey valley floor far beneath.

Moss came and helped her along, putting an affectionate arm around her. The shelf where they stood was broad enough for twenty men to form a line, side by side and arms apart. It swept in a C-curve outward from the mountain wall on the left, and the broadest part of the C permitted a dizzying vista of the valley below. Moss pointed down into the distant riverland and spoke into Judith's ear.

"Lishin."

She saw a dirty brown streak of river that blurred in and out of focus. A bridge spanned it, decrepit but intact, and beyond were dark oblongs of many buildings, some standing, some partially or completely demolished. East and west were larger ruins, then the rubble dwindled and merged with the lush unkempt greenery. Lishin squatted, grim, bare and drab in contrast to the flush of early spring grassland in the valley north of the decomposing town. Small vapor-ghosts clung and curled about some of the buildings closest to the riverbank. The water reached nearly level with the first deserted street.

The wind changed. A faint but distinct odor of decay crept along the shelf on which they stood.

"Told you Lishin stinks," Moss said sourly.

Judith felt hot and weak. She rubbed her eyes to clear away the dizziness.

"Better rest," Gannell cautioned.

"No," she said, taking her horse's bridle. "Later, in Lishin. Come on." She hauled the lathery, spent animal after her. "Come on."

The men watched her start over the ridge and down the gradual descent. They shook their heads.

Fever.

Sure as frost. Saw her eyes.

What keeps her up?

"Don't ask me," Moss tried to laugh; the sound rasped across his dry throat. "Don't even know why I'm here."

"Same as me, man," Gannell sighed ruefully. "Twenty-five krets and no brains."

The pale daylight faded further behind new clouds. The stink of the place was unmistakable at close range, but that, Judith noted, was largely due to the many dead fish washed up on the filthy beachfront west of the bridge.

"Must be thousands," Moss grumbled, turning up his nose.

"It's spring," said Judith. "There might be an old, abandoned mine upstream. The early rains wash out the acid, kill the fish."

The sun dipped lower; somewhere, not far distant, a pair of cold eyes watched their progress with disapproval. The mind behind the eyes leaked no thoughts detectable by coven instinct. Its menace was still unfelt.

They made Judith rest. She was already shaking with the fever. Moss would not dare enter any building for shelter, fearing the magic they might contain, so they camped in a small hollow near the bridge but far enough away from the skeletal stone hulks to comfort the men. They wrapped Judith in blankets and gently forced her to drink horsemint tea brewed over a tiny fire. She managed to swallow it. Gannell fed her bits of pone, carefully choosing those with the most meat.

"Go on, eat," he urged gently. "How you gonna stay pretty?"

She felt better after the food. "We'll begin in the morning," she said doggedly.

Gannell felt her hot forehead dubiously. "Begin what?"

"Looking," said Judith. "Finding."

The two men shrugged and shared their exasperation.

A leap to Karli was impossible. The indefinable barrier girdling their senses left Moss and Gannell more alone than ever, and it niggled at them, the profoundly disturbing and unnatural condition in which they found themselves. They slept lightly, and in the darkness, Moss noted the abhorrent smell of Lishin and the disquieting absence of normal night sounds. He heard his own pounding heart and the shallow breathing of the woman.

Still, in the morning, Judith was first into the saddle, eager to start, eyes everywhere.

"Many of these places must have been left deserted, abandoned," she remarked. "That's why Lishin survives just the way it was."

They marveled at the ease with which Judith could read the numerous signs and rusted street markers, few of which remained intact. She began to sketch a rough map.

"Mark Street...probably Market," her pencil flew. "Third Street. We'll turn up here."

The coven men followed, Moss shadowing Judith, Gannell covering the rear. The *clop* of hooves echoed eerily around them, counterpointed by distant thunder. Suddenly, Moss's eyes narrowed. He stared at a weedy patch of sidewalk, and even as he thought it, Gannell's mind touched his. ?

Tracks in the dust.

Gannell inspected them. *Fresh. This morning.*

Two, three pair I make.

Kriss.

Yes. Stay behind for cover.

They followed behind Judith, closer together now, arrows nocked to their bowstrings. Empty windows stared at them from blocks of age-darkened stone. They looked like giant mouths gaping wide to scream. They passed a high gray heap with a cupola tower, tall as thirty men. Suddenly Judith trotted her horse on to halt before a squat red pile blasted by ungentle centuries. When the men joined her, she was peering up at something on the front of the building.

"I was right!"

"About what?" Moss asked.

She slipped off the horse and brushed with both hands at crusted dirt on a greenish metal plate set in a heavy stone. The raised letters were nearly obliterated, but she traced a portion of a word with one finger, sounding it for them. "Amspor; that's all that's left, but it's enough to confirm the old maps—"

"Left of what?" Gannell wanted to know.

"The name of the town."

They both argued she was wrong. The name was Lishin, always had been.

"No!" Judith pointed at the red brick building. Much of the face was broken or eaten away. One unmarred stretch bore the letter LISHIN. "That says Lishin. It might have been, well, a kind of store like Korbin's in Lorl. But that's how you get the name. It's all men could see, those that could still read."

The high gray tower nearby gave her an idea. She could command an excellent view of the entire area from the upper chamber. Moss protested, but she rode over him.

Access to the tower was easy. There was a cracked but usable stairway, most of it lit by tall, narrow windows. Judith noticed nothing as they climbed, but Moss read volumes at every step.

The tower door, he could see, had been opened recently. There were fresh patterns of dirt and rust on the floor. Footprints on the stairs were obvious; halfway up, a foot slipped and skidded before regaining its balance in hasty ascent. A subtle disturbance in the dust on the bannister betrayed the garment sleeve that brushed across it sometime earlier. In the small stone chamber at the top, someone had moved from window to window, standing some time at each, searching for... Moss knew the answer. His mind sought Gannell's felt it respond.

Don't even cover their tracks.

Maybe they don't care.

?

It's like they're waiting?

Jude know?

Not yet?

Don't fret her, Gannell cautioned. She sick enough.

Judith's head slumped against the cool stone. Sweat soaked on her forehead. It had been dry-hot and flushed before.

"Jude, you got fever."

"I know, Moss."

"Didn't you put pebbles in the water?"

"You mean tablets?" She roused herself with difficulty, gazed over the valley to the north. "They were gone three days ago."

"Jude," he said with concern and respect, "you are one

goddam hardhead woman."

"Help me look," she pointed out over the vista. "I'm trying to find a place off by itself, probably with a lot of bare space around it."

Moss scanned the horizon, careful to note anything that might be movement. Then he saw something. "Big stone place north."

"No."

"Some more like it off east. Big red thing."

"Try west," Judith directed. "Wait...there! Southwest; I can just see it. A big, black square."

Moss looked where she pointed. He nodded. "Flat and black. Maybe two bowshot wide all around."

"Is it like a house, not tall, but something like a coven hall?"

"Looks like. What is it?"

She labored to catch her breath. She could see it now with some effort. In the middle of what once must have been an industrial park, a flat, elongated complex of buildings bordered by a paved square.

"That," said Judith quietly, "is the weapons house of your song-stories. The place where MacCauley—"

"Who?"

"You called him Callee. That's where he first put on the Girdle of Solitude."



HE BLACKENED RUIN stood a good way from the town, out where the brown splotch of Lishin slowly faded into the surrounding green, actually not one but five buildings. The one Judith chose, after a brief inspection of the others, was a low sprawl of concrete blocks, laced with rusted steel and various synthetics, not as sturdy as the town buildings. Decay was much further advanced. Much of the roof had long ago fallen in. The face of the building stretched nearly one hundred and fifty yards across the center of the rutted asphalt.

Moss was relieved to find the entrance free of tracks. He wandered from one great, bare room to another in Judith's ferreting wake. Eventually, she discovered a cavernous chamber near one entrance; it contained nothing but a few tables and many long, straight rows of metal boxes that stood higher than the woman herself. Here at least the roof was whole.

"Must have been the file room," Judith remarked. "Moss, we'll camp and work in here."

Heavy rain began to fall just before sundown, Gannell returned from hunting, sodden and irritable, with one scrawny squirrel. He said little while Judith was awake, but after she'd swallowed some horsemint tea and a little meat, and her shivering body sank into troubled sleep, the men shared their foreboding.

Kriss all around, Moss lepped.

No, gone.

See them?

Gannell nodded, picking the last morsel from the squirrel bone. "Dumb *mofo* Kriss can't hide for shit. I went up the north slope, just sat quiet and watched. Road goes west along the river, and there they were, just walking their horses down the middle of it. Going where? Don't ask. Home, I guess."

They lapsed into silence again. The Kriss had left; that should make them feel better, but it didn't. The underlying fear was still there with the peculiar smell that frightened their horses as well. There was something else.

Something on the rain.

Yes.

Hiding their fires was useless now, and Judith badly needed the warmth. They sheltered in the great room with the metal boxes, letting the smoke blow out of the windows, safe from the unceasing rain, but not the shapeless fear that tormented both men. Their instincts cried out to be wary, to be gone, but they could not say why. They reached out to feel and define the rain-thing, passed it back and forth between them. *Not Kriss. Not men at all.*

But they stayed to help Judith, Moss as the guardian he promised Garick, Gannell admiring the sheer stamina of the frail city woman. And no one would ever again offer them twenty-five krets in one lump.

Gannell hunted the sparse game while Moss assisted Judith as she tottered grimly about the twilight chamber, dwarfed by the high rows of metal files, communicating her needs in gestures and monosyllables. Feverish, she was all eyes and chalky skin and cracked, colorless lips. She labored at an old table, a blanket draped over her thin shoulders, working, working.

A-2: Examined lab complex today. Signs of intentional internal destruction, probably while enemy advanced into valley. Couldn't be large invading force. No marks of major battle in town. Marital law, must have evacuated population. Customary. Important papers burned, some of them. Probably no time for everything. But many files filled with black ash. What I want may be gone, destroyed.

A-5: IMPORTANT! Closet off file room. . . found several paper folders on shelf. Among them, possible sole surviving record of Girdle. Not plans or specs, those either destroyed or taken by MacCauley. But part of file label preserved, doubtless due to small oxygen in closet. TOPSEC/GIR—Single paper within: entire name on it. Girdle of Solitude. Helps account for survival of name in Uhian; some poetic physicist who never knew what he wrought. In folder: grey sheet of paper, looks like machine copy. Travel orders for MacCauley, destination blank. There are records elsewhere here (noted in A-3) of three other weapons repositories. The deduction is inevitable. The—

Judith hesitated. She pushed the papers aside, gestured to Moss for the tattered thing she called a map.

"Only four places it could've been," she said, half to herself, "and not in Lishin—"

He didn't hear the rest, but saw the three wobbly circles drawn at various points on the map, her pencil wavering above them. Then her head dropped on one arm and she slumped across the faded colors of the ragged scrap of paper. With a huge effort, Judith pushed herself up weakly from the table.

"Moss, I need to lie down. Just a little while."

Moss stared, astonished. It was the first time she'd allowed herself to succumb to the illness raging within her. She took two faltering steps toward her blankets. Moss tried to help her, but she stopped him.

"More... important. Put the papers back in the box."

He laid the mouldering papers, the map and her notes in the metal box and pushed it shut.

"Moss!"

He wheeled. Judith reeled and fell against the table. Her head lolled when he lifted her.

She did not regain consciousness for two merciful days.



THE FAR CORNERS of the room were cloaked in gloom. Moss rationed dead wood to the small fire. From time to time, he bent over Judith to cool the inferno of her dry forehead with a damp rag. She twitched feebly under the blankets. Moss swore they would leave in the morning, even if he had to tie her to a horse. Otherwise, she wouldn't live a week.

They were all hungry. There was no food in Lishin, no game. It was a dead place, as the coveners always said. He wondered whether Gannell had any luck hunting cross river.

Wengen, where are you, goddammit?

Gannell was long overdue. It made Moss nervous. Up till the moment Judith got too sick to stay on her feet, he'd at least had her company and could help Gannell. But now he was alone, cut off. Coven folks weren't meant to be alone. The solitude terrified him.

Gannell!

The hunter had to be cross river, hunting far up the other bank where game wasn't so scarce. But he knew enough not to stay out after dark in Lishin.

One of the horses shied outside. The other whinnied in frightened chorus. Moss went out to them, but they were impossible to calm, rearing away from him. The stink maddened them; it was much worse now. The whole world reeked of it.

Moss!

The urgent leg stabbed his mind.

Gannell? Where?

No fire! No fire! Get Jude, hide!

Where are you?

No time! Hide! It—

And Gannell was gone. Moss was alone again, pricking with fright. He whimpered softly. Animal instinct overrode his reason. He led the terrified horses to the entrance, shoed them off; they could do better fending for themselves. He loped to the fire, scattering it into smoking charcoal, then heaved the child-weight of Judith into his arms and stumbled to the small closet halfway down the long room.

Gannell said hide. Not run. The closet would have to do.

The opening was not large enough for him carrying Judith. While he was wrestling with the stubborn door, Moss heard the sound. *Not rain.* The alien thing he and Gannell had sensed on the rain was coming—fast, not wary, not circling like pack dogs, but straight and rapid without fear. His mind tried to encompass it but there was no recognizable shape or pattern he could define.

The thing was everywhere, like the waters of the swollen brown river lapping the streets of Lishin. A million eyes. No shape, yet countless shapes.

Moss put all his effort into the door. His muscles bunched; the thick hinges shrieked, bled rust and gave. He lifted Judith inside the tiny space and hauled the door shut. Moss squatted in darkness beside the unconscious woman. His sweating hand clutched the hilt of his knife.

The Thing kept coming. The sound, the hideous staccato noise composed of millions of noises, grew louder and louder and the Thing came closer, across the broken stone square, pouring through the entrance, into the central chamber, over the floor, crashing finally like the tumid river itself against the rusted door.

In the darkness beyond it, Moss howled out his fear lest his brain burst with it. He clawed at his ears to blot out the terror of the sound like a forest of birds gone mad.

A FEW DAYS BEFORE BELTEN, the lep flashed from the northern fringe of settlements to the masters at Karl's covenstead: *Moss and Jude are back.*

Neither could tell much of what had happened in Lishin. Judith was gaunt and yellow with recent fever. She begged weakly to be taken to Lori, where she had promised to wait.

Moss was incoherent, more than half insane. The masters worked patiently over him; using all their skill, they linked their minds with his, but part of that mind would not respond. Not gone or destroyed, simply unreachable behind a locked door. In time, his senses returned, but none of the Karl's ever got a clear story out of him. When pried, he would regard the questioner for a moment, but he could not concentrate. His eyes would wander past, unfocused, staring into a darkness that never quite left him.

He had only a vague memory of carrying Judith through flood-washed, filthy streets in which bloated things turned slowly in the sluggish tide. He crossed a bridge and near the far end of it... yes, he was sure of that; that much he couldn't forget. Near the far end, he found the picked bones of a horse and a man.

The latter skeleton retained tuft of black hair and a tatter of deerhide shirt. By the bones of the right hand lay a black-hilted hunter's knife.

GARICK FOUND HER after Lamas in Korbin's shed, coughing over a jug of liquor. She was haggard and leather-brown, but the leather was cracked, the steel will no longer malleable. When he carried her to the rumpled cot, he felt how much lighter she was.

"Jude," All his meaning crowded into the sound of her name. "Jude."

She responded feebly to his kiss.

If only she were Circle, they wouldn't need words. "It's you, Jude. Really you."

"Me," she nodded weakly. "Judith Randall Singer, Department of History sub-section on technology... let's have a drink."

"Jude, how long have we got?" He feared the answer. "How long before you go?"

She was very drunk but deeper than that, Judith was sick to her core. "How long? Days, weeks, years, Garick. All of romantic, dallying, slow-running—futile time, my darling. I'm not going back to the City," Judith said bitterly. "I never will. They won't accept me now." She downed the sida neat. "I went to the Self-Gate and waited. They catalogued and scanned me and judged me contaminated. They were sorry, oh yes, they were very sorry. But firm. They rejected me."

Garick struggled to understand things totally beyond his comprehension. She said the Self-Gate had things called sensors and they read her as surely as the Uhians could lep mind to mind. The sensors fed data to the synergizer in cold symbols that weighed her fate. She spoke of viruses, antibodies, germs, and he listened and tried to understand.

"They've been without disease for hundreds of years," Judith explained. "To let me in now might kill them all." Her words trailed off into a dry cough.

He held her, angry. "They never should've sent you to Lishin!"

"Send?" She looked up, puzzled. "They never sent me, Garick. City was horrified at my plan. The idea was an obscenity. They rejected every request I made to go. They said there was no value whatsoever in such a journey, only

danger, and they warned—oh yes, I was warned—of possible exclusion should I try it alone. Well, I did. And they did. Action, reaction. Have a drink, Garick."

"Don't cry, Jude. Please don't cry. Your eyes are all red. You'll come home with me. Shando life is good, Jude. I can make a place for you—"

"Me, the lepers wonder?" she asked drily. "In a coven?" But he didn't heed the acid in her tone.

"Yes! You'll get better, I'll make you better if you'll listen this time. Told you not to go to Lishin, warned you myself. Damn if I know how Moss got you back alive. *Baby* going on a grownup job."

Judith regarded him with the first trace of amusement she'd felt in days. "Garick," she said tenderly, "how old do you think I am?"

"Eighteen, nineteen," he shrugged. "Why?"

"You think of me as a baby? A little girl who took you for her first lover on this corn-shuck mattress?" She stroked his cheek with affection and a condescension that made Garick feel odd and gangling.

"Jude," he asked hoarsely, "how old are you?"

"Before anyone is of value to the City, they must be taught," Judith began. "The process of education takes more than one of your lifetimes, and another lifetime—eighty or ninety Belten fires, my love—is spent narrowing down to one's own chosen fragment of the puzzle, so one may begin to work." She poured and downed another formidable drink.

She slid off the cot and pulled her loose robe over her head, standing bare before him. Garick saw how pitifully small the breasts had shrunk, how her ribs showed clear and the skin sagged on the once-firm hips. But Judith shook her head.

"Forget I'm a woman," she commanded him. "Look at the animal of me—see our kind of magic." She pointed to a faint red line on her side beneath the bottom rib. "Here's where they gave me three different sets of kidneys. I've had two new hearts, additional brain cells grafted on. They've cloned every organ for repair and replacement." She held up a glass container with a handful of tablets left inside. "This bottle holds tablets that keep my metabolism at the rate recorded when I was eighteen."

Garick whispered it, awed. "Then you live forever."

"No," she shook her head. "Not forever, but for a long, long time. Forever, says an old City joke, is in the future."

Garick had been raised to accept magic as part of life, and so, impossible as it sounded, he was prepared to countenance the brand of mystery in which City was expert. Judith was smiling at him again, a bitter, acid curve of her too-delicate mouth.

"Garick, have you ever heard the word 'absurd'?"

"No."

"To be over three hundred years old, and yet a fool and not know yourself: that's absurd. I should have lived another four or five hundred of your years, perhaps more. As it is, it will be... something less than that."

The hard smile softened as she bent to kiss him. "At least, I guess I'll die 'beautiful.' That's your gift to me, Garick. Till you came, 'beautiful' was only an abstract concept, a principle to be dissected by philosophers—"

"Damn that City," he cursed, and it was not a young sound.

"—you have made me beautiful," she knelt and slipped into his arms, "like a tyrant god pointing to the silly, stitched up patchwork of me and saying 'love!'"

"Damn them." He was crying.

"—so I love you, Garick. Did you know that I was jealous of Jenna? I loved you that much; after three hundred years, that was a genuinely unique experience."

She began to cough again, and Garick gently bullied her away from the liquor to the bed, made her lie down and stretched out beside her so she could hold on to him. The last of her strength went into that.

"I'm so tired, Garick. I want to go home."

"Listen, Jude," he pressed her close, "they said you wouldn't last the winter, but you did; said you wouldn't get over Blue Mountains, but you did; said you'd never come back alive from Lishin, and here you are! You're tougher'n I am, Jude!" He rocked her like a child in his arms, reassuring himself as well as her. "You going to have lots of years, Jude, lots of 'em. All good. You come to Shando country with me. You want to go home? From now on, *Shando's* your home. It's yours. And so am I."

It was deeply felt, but he was twenty and she was more than fifteen times older. But no, he knew better: they were both young and beautiful and they would be rich and live forever.

"Let's go home, Jude," he murmured in her ear. She nodded gratefully and, with her last ounce of strength expended in the effort, fell asleep in his arms.

THE INFANT SINGER first opened his eyes between Lams and Samman. His mother took the last precious anaesthetic in her pack, and so was unconscious when the baby was delivered.

She wanted to name him Randall Singer after her father, but Garick wouldn't hear of such a lengthy name for a Shando boy, so they compromised and he was just Singer.

He remembered many things clearly, even as an infant: the big, new log house that smelled of raw pine and apples; the forest on three sides and the orchards rolling away to the end of creation; the laughter of his parents as they played with him on a thick sheepskin rug. In the dark winter months, he was fascinated by the huge fire curling fantastic shadows over the hearth as he strove to understand the sounds they made.

He understood his mother first, and he soon began to realize that she made one kind of sound with his father and another with himself, repeating patiently and always showing him the letters.

"Singer. Sing-er. See? S-i-n-g-e-r."

But he was six before he realized that he spoke two languages, Uhan and the Old Language, as Judith called the form of speech she chose to use. He also learned that he was the only child in Charzen who could read. There were no books, but his mother printed out tales which she called history. She taught Garick at the same time, and his father roared with delight, digesting words and concepts like savory preserved fruit, spraying them out in fountains of sound like children playing in water. Then Judith would giggle at his fooling and hurl her tiny arms around his thick shoulders, and for a while they would forget Singer, yet the child never felt alone at such times, but safer than ever.

His mother astonished him with strange tales of the City, of the streets that moved, the machines that cleaned houses, played music, flashed pictures, cooked food, and thought more swiftly and deeply in a second than a hundred masters in a year. His dark, solemn little face lit up in wonder, and he loved the stories of the City best of all.

"Someday," she often said, "someday you must see it. You must go there someday."

But there were other times when his mother was remote and untouchable, as when she sat before her Mrikan mirror, lips moving silently, one finger slowly tracing the planes and lines of her face. When she rose then she saw neither child nor Garick nor house, and Singer dreaded these moments. They made him feel empty inside.

She never spoke to him of death.

His father taught him as much as his mother. He learned to read the forest as easy as a page of Old Language. Garick sang the old stories to him, and tried to explain the order of things. There were always covens, he said, because men knew deep in their hearts it was an answer to life that worked for them, gave them a hold on existence. Singer thought he understood the logic of it.

And yet his father did not speak to him much of death.

"Our life is good and safe," Garick told him. And Singer believed it, playing through the long afternoons with other children at cup-and-knife games like *Save the House*, some attacking, some defending, pretending to raise fearsome powers like the masters:

*Master of storm, guard me east,
Master of lightning, guard me south,
Master of water, guard me west,
Black Bull, horn god, guard me north!*

A game, yet one deadly serious in child-longing. Singer hunted stern and silent over his defended circle and pentagram. An older boy raised his knife and plunged it unfairly into the heart of Singer's territory.

Singer's eyes seemed to turn black as the dark strength burst forth from him. His eyes caught and held the other boy's. Singer stuck out one finger and prodded his antagonist sharply, once. The other child slowly, reluctantly put his hand on his knife and took it back, sheathing it.

Singer broke contact, and the boy ran off, crying.

"He stole him!" the master told Garick. "Stole little Boody, not only touched his mind but moved it, moved his hand, made him take the knife back."

"I don't believe it," Garick was stunned. "No one can do that, not even masters."

"Your son can."

"How?"

"He touched the boy," said the master, Edan. "Says he had to touch him."

After the masters left, Garick stared at Singer in mixed delight and awe. "Jude, you know what this means?"

"No."

"He could be a master."

"Of what?" Judith shot back. "Of Charzen? Of mud-holes? Of pigs and stinking hunters?"

Garick was not so much angry as perplexed. "What would you save him for, Jude? City? That's dead, gone. They'll stop him at the Self-Gate like anyone else."

"But he has a mind, Garick, an excellent mind! It'd be a crime to waste that on a Samman fire."

His father was a gentle man—gentle, not weak. For the sake of his love for Judith and his son, he tried to balance her teaching against the unwritten wisdom of his own heritage. The love between his parents was a strong fabric of security over Singer, but now as he grew and his gifts developed, he sensed dangerous rents in the fabric. His mother drank more. Garick was often away from home.

Once, Singer saw his father riding with Jenna. They looked happy together.

Singer began to take instruction from the masters, much against Judith's will. He was far ahead of the other chosen children. What they labored to memorize, he could instantly write, inventing symbols where no existing ones would serve. But his fearsome power to steal the mind and shape the purpose of others began to cut him off from his peers. Nobody wanted Singer to touch him. As he grew, he learned not to use the strange power which frightened even the masters. But it grew with the rest of his gifts, and as it did, the gulf widened between his parents.

Yet, ironically, it was not his gifts but Garick's unguessed ones that finally split their world asunder.

GARICK WAS RIDING down the orchard rows during a rainstorm, when he felt the hairs on the back of his neck prickle. Before he had time to take cover, he was prostrated by a bolt of lightning.

The orchard men reached him first, then the masters through their urgent leap, Jenna galloping in the lead. The horse had to be put out of its agony. Garick barely breathed; he was past their combined help.

When Judith and her son rode up, the crowd was already thick. Singer had an armload of blankets, and his mother ploved furiously into the throng.

"Move, damn it, *move!* Get away, let him breathe!"

She confronted Jenna over Garick's limp form.

"You can't help him," the girl challenged tersely. Judith dismissed her with a contemptuous gesture.

"And I suppose you can? He's not dying, but he could if I don't work quickly. He's in shock. Electrical shock. I suppose you know what that is, you ignorant bastards?" Her voice rising shrilly, Judith snatched the blankets from Singer and, with his fumbling help, wrapped them thickly around Garick.

Singer stared at his father, frightened. Garick's face was white, his breathing rapid and shallow. It terrified the boy, who knew so little of death.

"Get his feet up!" Judith snapped.

No one moved. Shoving, cursing, she tried to do it herself. Singer struggled to help. Then Jase moved her gently aside and tucked Garick's legs under one thick arm. Judith knelt, soaking a cloth from a waterbag, wiping the pallid face.

"Rub his wrists," she muttered to her son. "Hard."

Singer obeyed, rubbing until the brown skin turned red. His own hands began to ache, but he was afraid to stop. The big hand lay limp in his. He rubbed harder.

And the limp fingers flexed; Singer felt pressure on his own fingers. Garick's eyes blinked open. His other hand twitched on the blanket, then rose feebly to touch Judith's face.

Singer saw the look of victory his mother slashed at young Jenna.

Judith nursed him fiercely. As he recuperated, the masters of Charzen, having detected certain indicative signs, came in a delegation. They made tests after their fashion and found that Garick's ability to leap had trebled. At their request, the mystified apple-farmer successfully raised a formidable cone of power.

Judith scoffed. Every power the coveners called magic, she said, emanated from a specific portion of the brain for purely physiological reasons, and a mind with potential psychic ability—especially an attuned Uhian mind—could be stimulated electrically to produce conscious control of these powers.

The masters barely listened. Judith was a tolerated outsider, though she grew less tolerable with the years, a

querulous, sharp-tongued woman, too quick to show contempt for their way.

Now Jase had to manage the orchards alone as Garick labored morning and night under the masters, writing things that others memorized—thanks to what he'd learned over the years from Judith. More, with her help, he was able to theorize upon the origin of powers, something that no master had ever thought out in a logical manner. But her aid only served to hasten the thrusting of Garick further apart from his family. He was quieter, more remote, thin with fasting. His old laughter was muted.

At Sinjin, in mid-summer, Garick became a master of the inner circle. That night, he stood, hesitant, by the door, huge and naked except for the white tabard of his new rank. New forces, painful and wrenching tensions passed between him and Judith; and Singer's head ached with the brutal emotions with which the air was charged.

"I'm not just a farmer now, Jude," Garick said. "I can't say no."

"I'm staying here, then. I will *not* watch."

"Jude... I love you."

"Oh?" She glared at him and shook the long, gray-wisped hair from her narrow face. "And who will give you the Five Kisses? And who will straddle you?"

"Jude—"

Her face contorted with fury. "Why don't you name her?"

"Jude, I've told you—"

"*Go rot your Jenna!*"

"I've told you, that's a symbol," Garick struggled to explain in Judith's Old Language, his own inadequate to the task. "A sign of power, of life." He sat down beside her. "Nothing happens in the circle."

She raised her head, weary and haggard. "But how much out of it?" She's already pregnant and making no secret of it. She might have waited just a little while. It won't be long."

Singer was afraid to understand what she meant, but a new kind of anguish welled up in his breast.

"No, I won't lie. I've been lonely," Garick said. "You *make* me lonely. If you didn't drink so damn much—"

"The sight of you with Jenna goes easier with a drink!"

"Jenna is... only Jenna," he grated. "I do love you."

"Then, if you love me, tell them *no*."

"I can't!" Garick uncoiled his great mass from the bed, paced to the door. "This ain't—this *isn't* pride, not for me, not for Jenna. Jude, I've given in to you everywhere I can, but this is *my* way, and these are my people—and I'll tell you, if a new world ever comes, we coveners are the ones who'll bring it to birth, not that almighty damn City. Not those fat Mrikans counting their money. *Us*. Once, just once, you have to understand me, because what I was born with—and what you've taught me—"

But Singer never heard the end of the thought, for just then the house grew rosy with the flickering illumination of a ring of torches. The masters had come for his father.

Garick hesitated at the door. "Judith, I do love you. I owe you so much."

"Yes, you do," she forced a calm smile, though her son sensed the stifled longing behind it. "You owe me your life and most of your mind, and all of your learning. And your son. That's quite a debt. Think you can pay it back?"

The child Singer plucked at his mother's knee, tried to climb into her lap. She rose, ignoring him, and walked stiffly out of the room to pour herself a drink.

Singer stood alone for a long time, choking back sobs.

HE HAD BEEN TOLD not to go near the grove, but something impelled him to disobey this once. His father was already in the circle, past the first course sunways when challenge after challenge was met with ritual response. Now he lay naked with the other men near the rim of the trenced circle. The music rose from the thronged ring of watchers; one rhythm, then another and another intermingled as the female masters moved sinuously outward from the center, flames licking tongues of light along the shining supple contours of their bodies.

Jenna stood naked over Garick and raised her hands to unpin the red mass of hair, letting it cascade over her shoulders. Other women mirrored her movements, each poised above a supine male. Even far away, Singer could see the new hard roundness of Jenna's belly. She knelt and straddled Garick.

No! Don't!

Singer started toward them, a cry building in his throat, but stopped. To reach them would be to cross and break the circle, dare the power built up in it. Impossible at his age! He clubbed impotently with small fists.

It would be years before Singer found a name for the thing that died that night, but even as he watched, he knew something very special and private was gone forever.

At home, his mother swayed uncertainly in front of her mirror. The tension in the muscles of her neck and back showed him that she was in pain. It came often now.

Judith looked down at her small son. She put aside the jug and reached out to ruffle his hair, but a new spasm of pain tore at her.

"Mama?"

"It's all right."

Desperately, Singer flung his arms around her and tried, between sobs, to tell her she was so much more beautiful than red Jenna and always would be. She cradled his head for a long time, rocking him gently. Then she sat him down and held his gaze with grave, shadow-circled eyes.

The fierce new light in her eyes riveted him where he stood.

"Now listen and remember," she commanded. "The story of Callee is true! I proved it before you were born. You're going to learn it better than anyone ever has."

"Why?" he protested. "What good is it? Dad—"

The pain took her again. Her nails left marks on his wrist. When the spasm passed, she continued weakly. "No time...you'll learn what I tell you...hear me?"

His voice was thin with fear. "Yes."

"Good," said Judith. "Now, there once was a man named Callee, for that's how you know him. But time...time rounds out the edges of words and names. He was really... MacCauley, Henry MacCauley, and in...the last of the old days...in the place called Lishin..."

ARIN WAS BORN at Loomin with considerable brouhaha in Charzen. Singer understood that the infant was a brother of some kind.

When Garick tried to talk to his son, he encountered a wall. Instead of arguing, the older man forebore to harass either Singer or Judith. His own life was changing too rapidly.

The elderly master who wore the antler crown of the god died in the spring. Garick's mother, Tuli, having shared the title, proposed to step down in favor of Jenna, provided Garick be named god.

And so, in his twenty-seventh year, Garick became god of

the Shando. Next to him, the gleam from her candle coronet less bright than the triumph in her eye, sat Jenna, the new goddess.

NOW THE HOUSE by the orchards was nearly empty. Few came except the women sent by Garick to help Judith with chores beyond her strength that was failing more swiftly than any but Singer realized. She made a joke of it with him. If he caught her wincing, she would groan comically.

"I'm falling apart like bad plumbing."

It was agony to the boy, and yet, sheltered so long from the stark arithmetic of death, he clung to her, perversely fascinated by the process of dissolution. As her body failed, at last the sharp mind started to grow blunt. But as she felt it falter, she drove herself more cruelly than at Lishin, tormenting herself to express thoughts that eluded her. She longed for the concise verbal shorthand of the City, but lacking that, she pummeled Singer with facts and concepts, cramming his brain with an encyclopedia of data that he could not hope to assimilate. The hours and days were too brief to tell him everything about her view of life and the purpose of Man as postulated in the long centuries of her work within the City.

One thing she said stuck in his mind because of the oddity of the picture, though he had no idea what it meant. "The City and the covens will break each other, as on a wheel. But the wheel won't turn until—" A fit of coughing interrupted Judith, and she never finished the thought.

All his life, Singer had been half City, half Shando, but now Judith buried most of what was coven beneath the mountain of treasures she heaped upon her son. Divorced from his father's customs and way of life, Singer began to long for the City. But there was no time to talk of it, for still his mother reeled off facts and speculated on the shape of the sundered society in which they dwelt. More and more frequently, Judith rambled and repeated herself.

The summer after Arin was born, Singer came home one day from playing alone in the forest. There were two horses at the front door; they were saddled with packs attached. He thought perhaps his father had come on one of his rare visits, but the house was silent.

His mother was not at the long table with a jug, nor by the kitchen hearth or in the neglected garden. She lay in the big bed, and the sight of her stopped him in the doorway.

Death was on her, clear as a command. She was pasty white and stiff with suppressed pain. Only her eyes were fiercely, yearningly alive. And yet, she had bathed and combed out her hair, tying it back with a bit of scarlet cloth. She wore a soft white cotton robe that hung loose about her emaciated body.

She stretched out her hands to him. Her appearance frightened Singer all the more for her loveliness.

"You...you look—"

"Beautiful?" she laughed with gentle irony. "Your father always thought so, and I think he had good taste. Come here, I want to hug you. When was the last time I told you how much I love you?" She coughed, and the violent spasm left her even weaker. She took his hand. "Oh, you're dirty! Have you been playing in the mud again, my baby?"

There was a time when the word would have rankled, when he would have thought his stature demeaned, but now the boy compressed his lips and blinked to fight back the tears.

"Never mind," said Judith. "There are new skins in your room. Go wash and put them on. It's time to go."



"Where?"

"East," Judith replied. "It's time to show you the City. One last... last gift."

His heart leaped at the word. Above all his dreams of magic, adventure and other boyish enthusiasms there hovered, remote and irresistible, the City.

"Hurry," his mother urged. "The horses are ready."

THEY COULD NOT TRAVEL FAST. Most of the time, Singer had to walk his horse to stay with his mother. Wary for wild dogs or cowan hunters, the youth rode as he had been taught in strange country, arrow ready and smeared with pokeberry.

He glanced back to see Judith. She was bent double over the horse's neck, and as he turned, she tried to halt the animal. He trotted back to her.

"Get me down," she panted.

She could not ride further without rest. Not far back, Singer had noted a small cave. They returned to it, and once there he made a bed of pine boughs for her, and fetched fresh water to bathe the sweat from her face. He tried to make her eat a little of the food they packed, but Judith listlessly waved it away. He built a fire at the cave mouth to keep her warm without the smoke bothering her.

Time passed. Now and then Singer tried to make conversation, just to dispel the loneliness, but Judith lay just the way he had settled her and did not utter a sound. His hands knotted into fists to push back the inarticulate tears that burned behind his eyelids. The Shando in him knew what was coming, but even though his knife was no thammay, he dug desperately in the earth around her, drawing the circle, filling it with every remembered rune of protection, and then he crouched by her with the knife. Death might take her, but he was determined it would not be this night, not in his circle.

Just before morning, he woke suddenly as if someone had kicked him; he listened. His mother still breathed very slowly, but she was awake; he knew without looking. In the silence, her voice was very weak, but composed and clear. She spoke in the Old Language whose music he had come to love.

"It's time we said goodbye, baby."

He raised on one elbow, stiff from the awkward position he'd held all night. "Does it hurt?"

"No," she whispered. "I'm like an old clock running down to stillness. But you never saw a clock, did you?"

He shook his head, the tears welling up in his eyes. He fought them back.

"There are clocks there," she said.

"In City?"

"Yes. Oh, my baby, I so much wanted to show it to you. Go there after I'm gone. Promise me you'll see the City. So much of me is still there, and you must bring the rest back..."

"The rest?"

"All I taught you." But there was no strength left. She had to lie still and just breathe for a while. Then: "Go there; perhaps not now, but when you're older. They'll need you there, my baby."

Her fingers closed over his, cold.

"Perhaps," she whispered, "perhaps I'll tell you more in the morning. I'll be stronger then. I'll tell you about the City when it's light."

She closed her eyes. Singer shifted his position and lay on his stomach. He was very tired. In a little while, he felt one of the blankets spread gently over his shoulders, and realized what such a simple effort must have cost her, but he couldn't

sleep. He was balancing already on the soft edge of sleep. Time passed. He breathed more deeply. Then, abruptly, he woke.

"Garick."

So low he barely heard it. Then he felt her body heave feebly close to his. His mother was crying.

"Garick, I wanted—"

The message was never completed. The morning wind blew fresh through the cave-mouth and across his frail circle, and it was cold. As he moved his lips to speak, Singer knew he was alone, though nearly a score of winters would pass before the full enormity of the fact crushed him and provided him with a new and bitter strength.

THEY FOUND SINGER wandering near the cave. The god and goddess met the returning hunters as they rode into the stockade yard, with the small boy whose feet gattered ludicrously short of the stirrups. A curious crowd gathered around them.

"Found him a day east," the hunters reported. "Other horse, too."

They eased their mounts aside as Garick shouldered his way through to his son.

"And Judith?"

No one spoke. A horse snuffled in the silence.

"Then she's dead." Garick's voice seemed devoid of emotion or strength. "Where?"

"I buried her," Singer said tightly. "The grave's marked. You can read it."

Father and son faced each other. *If he touches me*, Singer thought, *I'll cut him with the knife that dug her grave.*

Garick seemed to read that thought and more. He didn't reach for Singer; instead, he looked blindly at Jenna who waited impassively with the baby Arin in her arms, mumbled something like thanks to the hunters, and turned slowly back up the steps toward the god's hall. Singer stiffened; it was not enough. He would not let him go without taking all his tangled love and hatred for the man who was his father and hurling it at his back in one agonized cry that echoed between them throughout time.

"You can read it!"

Singer kicked the horse's flank; it reared and plunged through the open gate, taking him straight as an arrow across the meadow toward the forest, and down the years.

THE BROKEN CIRCLE

ARIN PAUSED long enough to wash off and change into a clean cotton robe. He had spent the night on the hill with Magill and Kon and the sida left his head swimming, his stomach heaving when the call came from the god and goddess far too early in the bright morning.

In the Center Hall, Arin approached his parents with precarious dignity and knelt before the two crowns.

"We heard," Garick began, "how you worked staymagic on the deer to bait Singer."

Arin nodded wanly; his stomach convulsed in warning.

"Edan will test you," Jenna said. "If he finds you can raise power—"

"And can stand the hard trials of the masters' way," Garick interjected, and Arin saw the bleak doubt in his father's face, "then, Arin, you may be called."

Jenna beamed proudly at her son. She noted his pallid color

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and attributed it to stunned surprise. Garick held no such illusion.

Now old Edan hobbled forward and spoke to Arin. Frail though he was, his voice echoed powerfully in the great room. "The masters are the bone in Shando flesh, Arin. Our magic leads, our power protects. All coveners have some gift; it makes us what we are, but only a few can be heated and shaped like iron for the circle. To be a master will ask from you everything you are. Your body will be like a dog kept half-hungry to do what your power wills, without question or argument or failure. Who knows if you're strong enough, but will you try it?"

For a brief moment, Edan mistook the rapt preoccupation in Arin's face for devout inspiration. Arin swallowed with difficulty—twice—then, with a pathetic sound, he doubled over and was violently sick on the floor. When it passed, he sensed that he was the center of a stunned silence.

"Aw, ma," he shoked, "damn, I'm sorry."

She did not reply. No one did.

Jenna was rigid with shame. She turned to Garick, who sat with his head lowered. His tightly-compressed lips might be locked over anger or something else. Whatever, he mastered it and spoke in a low voice to her: "Take the masters outside, Jenna."

"But—"

"Take them outside—and wait."

Garick did not move until the door closed behind the last of them. Arin was wilted on a bench, head in his hands. Garick reached him in three strides, hooked a pitcher of water in long fingers and emptied it over Arin's head.

"Sit up, boy!" There was an edge to his voice. "Some have cried when called into the circle, others have been afraid—but you, Arin, you're the first who ever puked!"

Arin felt small as a toad. "I shamed you."

"You?" Garick measured him sadly. "I never expected better from you. If I could trust him, I'd be glad to send Singer in your place."

Singer?

"Why not?" Garick challenged, hands on narrow hips. "Singer could have been a master. He could bend minds with his will when he was seven. No master can do what he can, not even Edan. But Jenna thinks you're fit for the circle. Perhaps she wants to prove Singer isn't the only—"

He broke off in dry bitterness, but it touched something in Arin never spoken before.

"He's yours, isn't he. Not Jenna's. Yours."

Garick nodded. "Yes."

"Someone said once. I didn't believe. Only if I could hear it from you."

"So now," said Garick, "you've heard."

"You don't count me much, Garick."

"No," the older man admitted sadly. "Not much. Not bad, not good. I've watched you drink and rut and loaf your way to being a man, the easiest life in Charzen. A little work in the orchards, a train to Lort now and then, and the rest of the time it's you and Kon and Magill—the Three." Garick's lips twisted in derision. "Three what, Arin?"

"You didn't want me to be a hunter?"

Garick sighed. "I let you be one. You were always... an afterthought. I didn't need you then. But now, now I do."

Arin clasped his hands between his long, sprawling legs. A strange feeling was birthing inside him and it ached. He felt himself beginning to lose a comfortable thing too long taken for granted.

Parke Godwin/Marvin Kaye

"So," he said, "you'd rather use Singer."

"Forget what I said," Garick replied, sensing the unfamiliar pangs growing in his son, "I'm sending you."

"Where?"

"A long way," said his father. "To the Karli. To the Wengen and the Kriss. Others go south to Suffec."

Arin looked up. "Kriss are cowan."

"They're still Uhiens. I want every man who'll fight with us."

"Fight?" Arin's head rejected the concept. Circle never fought. An enemy large enough to need such numbers as Garick suggested was beyond him. "Fight who?"

"The City."

Arin nearly fell off the bench. "Dad—you been drinking, 'too?"

"I know what you're thinking and I don't want to hear it," Garick stated wearily. "We'll die, I know. We'll die anyway. There's plague in the forest, moving this way. Last time it took half of Charzen. I'm not about to sit back and watch it happen again. Arin, that's been our way too long—sitting back and hoping this will pass and that won't happen, and all the time, time itself will pass and we'll be well." Garick paced from one end of the hall to the other, restless with energy and purpose. "I've often wondered what we'd do if City ever sent their merks to finish us. Probably the only reason why they haven't is because we're not that important to them. But even without that, and even without the plague, we're dying, Arin, because we don't change, don't build, don't grow."

"Look, Arin," he emphasized, "it's not to end Circle but to keep it alive that we have to grow and learn and fight."

"But fight to do what?"

"To open up that City at last and make them talk to us!"

Arin stared at his father, convinced that Garick had gone mad. Garick, picking up the thought, halted before the god's chair, the ascended the dais and sat, his tone brusquely altered.

"Now hear me, Arin. We've lepped to Karli. They've passed it on. They know my wish. I don't know yet whether they'll join us. It will take more than a lep to convince them to cooperate, it will need strong, smart talk. But Hoban and the Karli masters won't listen to anyone but another master. If he happens to be Garick's son, they'll listen very carefully. You'll have money, a lot of it. I'm going to buy them. If the City can buy soldiers, so can I."

"Karli don't care about money," Arin argued.

"They just never had enough to care about."

"So this is what you wanted me for?"

His father nodded. "Say yes, and we'll see how much you can carry without breaking. Say yes, and you'll start tomorrow with Edan. You'll purify yourself as I did. You'll eat when and what he says, you'll fast when he tells you. You'll learn twice as fast as I did, because you don't have time for more. You won't drink at all. If I find you in the same room with an open jug, I'll boot your ass so high, you'll wear it for a hat. You'll clear that brain your mother claims you own, and you'll remember every single thing that Edan teaches you. And when Edan's done for the day—every day—you'll come to me to learn Old Language."

"But no masters learn that," Arin protested. "Why should they?"

"I did," Garick was intractable, "and you will too, so you can think, Arin. Think about something a little higher than your belly and your balls. You'll learn it so you can find words to bring the Uhiens to my side. And for another reason, even

harder, but we won't speak of that now. Say yes to Edan and, when you're ready, you'll ride with seven men so you'll have a strong leg to keep me close to what you're doing." His bleak expression betrayed the ghost of something warmer. "I don't know how far you'll have to ride, or how long. You may not come back at all, but if you do—son—you'll be more than a hunter in a hide shirt."

For the first time, Arin looked directly at this father. There was a lot more than just a man to Garick, deep things. Arin's mind had never before dealt with complexities. The things he must say were not easy, but his father knew words better than anyone. Arin did what he could to drag out the best of his own tiny store.

"You never said that before," he struggled. "I mean, you never said about—needing me. Never talked to me, maybe hey, goodbye, that's all. You don't even talk to Jenna."

"No." A memory rustled like dead leaves around Garick's heart. He didn't talk to Jenna. There was nothing to say. He got what he paid for.

"I never talk much," Arin went on. Kon and Magill, we share, don't need much words. I don't know," he strained after clear meaning. "Maybe I am a dumb son'bitch, I mean—what's there to think about? Horses, deer...but maybe..."

He rose from the bench, hands outstretched in frustrated inability to explain, a supplicatory gesture. Then he picked up the antler crown and carried it to Garick, holding it out with dignity and respect.

"Give me Kon and Magill as two of my seven. I'll try to learn from Edan. When you tell me, I ride."

The dead leaves rustled again; something in Garick stirred deeply. His eyes burned. The emotion surprised him. He gripped his son's hand.

"Yes, Arin."

Perhaps yes. Arin is forest, and they'll follow him. And then, Jude, I'll ram Singer into that City like an arrow in the gut!

The god raised his voice, vital with hope, to carry beyond the closed doors.

"Jenna! Bring in the masters!"

He glanced down at the floor, then grinned drily at Arin. "And you get a cloth, quick. Clean up your offering before they slip and break their necks."



IN THE SILENCE OF THE FOREST, someone thought of him, and he stirred, surprised and disturbed. The bitter tang of derision burned the runes in his mind.

Singer. Misfit.

It had been 20 years since he'd fled, since Judith's death. He had been north, hardening his muscles at the steel forges of Wengen. He baked in the sun on coasting cotton boats, sought and did not find the fabled island of Myudah, reeled drunk in Lorf with a whore on each arm, spitting curses at the great City dim in the distance. He merely wanted them to keep his company as he violated the Self-Gate.

The women ran away shrieking, calling Singer mad. And he was half insane that night when the sensors scanned him, divined his essence, and in the city, a metal finger flicked a seldom-used switch...

The mercenary troops who guard the border came to collect his lifeless body, but to their amazement, they found Singer alive and carried him, whimpering and gibbering, out of the zone.

He had finally learned something about City. Even so there were horrors of that night he dare not clearly recall. *He was Singer, and he was alone.* It had taken two decades to accept that fact.

The cave was much as he last saw it. He remembered where his mother lay the night she died. As he traveled toward it he heard the Shando lep: *Plague moving east.*

Then, there were the other thoughts: *Singer.*

Misfit.

They flowed closer, warily.

Hunt. There was a threat in it. *Hunt.* Again it came. There were three men in the forest. Shando. Garick's men. Singer listened, unmoving.

Then it came clear. *Hunt... Singer...* Now there was no doubt! Three of them, leaking thoughts like a cracked jar, one stronger than the others.

Singer froze, the bow half bent toward the buck stopped in the middle of the trail. He was suddenly watching *Singer* watching the deer. The bow twanged. The buck reared, then fell, the arrow shaft protruding from the beast's thorax.

Singer was halfway to the animal when his eye caught the regular line of trench in the growing light. He cursed his stupidity. It was the magic and he was in the open. They'd be around him. If he reached for an arrow, he'd be dead. He dropped the bow and waited, already tense, half expecting the impact of an arrow.

"All right. I'm Singer. Who are you?"

A rope snaked over him from behind, then another. A voice, sharp as his own, came from a nearby thicket.

"Kon! Magill! Don't touch him. He's bad as a snake. *Don't touch him!*"

It was barely imprisonment. He was lightly shackled by a long chain that allowed him the whole, spacious room and part of the overgrown garden beyond his door. The food came promptly and hot from Garick's own table, and Judith's few remaining books were placed at his disposal. For the time being, Singer accepted his fate.

In the fragrant air at dusk, Singer sat one twilight in the doorway to his garden. The lep was unusually strong, and it concerned the new master. He shut his eyes and read it. Arin was going somewhere.

Arin needs—

The young man was thinner now and quietly composed, the fasting and denial imposed on him by Edan already stamping itself on his carefree manner, altering his gait to a more deliberate tread. Arin talked with certain other coveners in front of the log hall. Singer concentrated on their lep.

Arin needs riders—

And some listened to Arin, while others walked away. The people talked late over the fire, discussing the quest the god imposed on the young hunter, leaking thoughts that Singer read as easily as a primer.

New thing, Garick's making.

Outside Circle.

Not Circle ways.

At Milemas, midpoint in the year-wheel between Lams and Samman, Arin joined the masters. Singer stood in the doorway, hearing the staccato music from the grove. It brought the return of phantom pain, that night he'd run with deer-magic in his legs to stop what couldn't be halted. He shut the door against it.

Singer lay unmoving for hours as the power pulsed around him. Arin's signal was trebled now. He was making choices, feeling at men and women like pools of power, measuring

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their use and depth.

DRESSED IN BROWN STREAKED SKINS, Arin's people knelt or squatted around him as he drew precise lines in the dirt to illustrate his orders. He spoke easily and without hesitation. Edan's discipline had cut the fat from his idle mind, leaving it clear and placid so he could instruct his seven without the fumbling that might lessen their confidence in him.

Lep was better suited to feeling and action than the many-leveled thoughts he needed to instruct them. He employed the structuring of Old Language, Garick's gift to him.

Translating to speech was hard. Time after time he glanced up to see if the others were following him. Clay did; he was a quick one. Kon maybe, too, though time on time, Arin checked himself from slipping into the lifetime habit of lep with his friends. They understood lep better, but they all had to think on their own now. The journey and its needs and purposes were new, outside Circle. They had to understand words.

They were a broken circle in more ways than one.

Arin stopped speaking and looked at them. The twins seemed attentive. Blonde and brown-skinned with colorless, feral eyes, Teela and Sand were within a finger's width of the same height. But for the slight widening of Teela's hips, they were indistinguishable, voices low and whisper-shy, unused to the need for speech. That was partly the way of the Suffec, the most silent, most sharing of the covens. It was partly, too, their own special way: never separated, without parents for most of their sixteen years, they'd ridden north when game ran scarce in the fringe lands between Shando and Suffec. Circle was deep in them, but Arin was the first real master they'd ever known.

Clay and Hara were easier to reach since both had spent time among different peoples. At sixteen, Clay had ridden a short time with the merks in Lori who—among other duties—acted as border patrol for the City. But Circle was too strong in Clay, and he had left rather than fight against his own kind, as sometimes the merks were required to do.

Hara had trapped north of Karl and knew something of the Blue Mountains. He was nearly as tall as Kon and just about as quiet.

Only Holder bothered Arin. Chosen for his lep power, there was, though, an incompleteness about the sandy-haired youth, a corrosive jealousy that Arin could not quite trust. Holder barely listened to instructions. He gave the impression he could devise a better plan himself with half a chance, and thus gave Arin the most minimal respect due a master.

"Got to be in Karl by Samman," Arin said, "so I can join the masters at the fire and speak to them later. We leave in two days. Each carries twenty arrows and three pounds of corn meal, knife, extra clothes. Sand, you pick up the meat and dried apples, then come to the god's hall tonight and help Teela bake as much pone as we can carry."

Holder nudged Sand. "And eight jugs of sida."

"One," Arin corrected.

"What!"

"One for the cold night. Don't waste talk, boy."

"What happens," asked Holder, "if one of us wants to come back?"

There was a palpable shift; by one by one, the group regarded Arin, wondering how he'd handle the subtle challenge in

Holder's question. Arin didn't move. Only his eyes lifted to fix Holder's for a long moment.

"You come alone," the master replied. "If you can make it."

Holder felt uncomfortable under the eyes, but flashed an insolent smirk. "I could make it."

"That's good," said Arin. "Because, if you're wrong, Holder, snake-bit or merk-caught, you'll be wrong all alone."

Hara toyed with his knife. "Gives you a warm feeling, don't it, Holder-boy?"

There were no further questions.

And then one more joined the broken circle.

Singer caught it first, before she even came to Arin. Young. Deep rhythms, powerful but with a different strength from the others. Reason still unclear, but driven by some kind of need.

T

HERFOR

Arin rubbed his tired eyes and moved the candles closer to the page printed in Garick's bold script. He dipped his pen in pokeberry ink and lettered the new word again.

THEREFORE—IS LIKE—

Is like what? Means what? His pen hovered, then jabbed swiftly at the paper.

IS LIKE—SINCE THAT IS SO, THIS IS SO.

He laid the pen aside. The cool dusk beyond his open window was alive with wakening night sounds. Arin breathed deeply, relaxing as Edan had taught him to conserve and refresh energy. In the gloom beyond the island of candlelight, the door opened and two figures loomed into view.

Arin rose respectfully at his mother's presence. She was dressed simply, her sole ornamentation the iron moon-crescent that hung from her neck. Her auburn hair was tied back. Jenna strode to his table. The other, the tall young woman, hung back behind her.

"Girl wants to see you, Arin. Told her you've got no time, leaving day after tomorrow. You tell her to come?"

"All right." Kon had mentioned something about Elin that afternoon. "I told her, yes."

Elin stepped into the light. It was practically the first time they'd seen each other since the morning Arin had been called from the hill by the gods.

"Hey, Arin," Elin said shyly.

Jenna snorted and turned away. "Hell, kiss 'em all goodbye, then." She leveled an authoritarian finger. "But get some sleep, Arin. These fool books got your eyes squinty as old Edan's."

The door slammed, punctuating her disapproval.

"Hey, Elin." He gave her a light, affectionate hug, realizing with a stab of sensual memory how beautiful she was.

Elin's unbound hair tumbled about the shoulders of the fox cloak thrown over her robe, almost the same red-brown hue. No matter what she wore, Elin had a way of looking almost naked in her clothes. Her smoky, sleepy gray eyes appraised him now much as they had by moonlight or dawn on the hill. She pulled a chair close to his table.

"Well, don't you look fine, master Arin. Ain't said hey since—when was it?" Elin looked away. "Since last time on the hill. Been back there sometimes with Gill. It...I don't know."

He had to say it. "We're not together any more, Elin."

"Oh, hell, it ain't that." She smiled and waved the notion away so easily his vanity twinged. "Just... don't want to stay home any more." Reflective, a little sad. Then her sultry eyes lifted to him. "I can hunt and fight. You're short for lep."

? Though he knew what she was going to ask.

Want to go, Arin.

He read the flavor of her thought: strong, almost desperate need. Not for him, maybe not for anything Elin could name herself. She tossed the heavy hair over her shoulder.

"Nothing for me here. I'm nineteen since Leddy, and where I been outside Charzen? You got one woman, anyway. Teela." Elin made a face at Arin. "What log you find her under? Look like she never been inside a house."

Arin grinned, knowing Elin meant nothing malicious. In her own direct way, she'd hit on the truth of the quiet, female half of the Suffec twins.

"That's why she's going," he said. "You're more farm than forest."

"Hell, I can ride in my sleep."

"We all can."

I'm a good lep.

"Come on." He rose and went round the table to take her hands. "I'm glad you came. I don't have all the lep we need, but not you, Elin. You know Kon and Gill; rest are the same, half wild like deer. You're a home girl."

Elin tilted her head back to look at him. "All those times out on the hill and you never knew me at all." She was still smiling lazily up at him when the power she had slammed so hard into his mind that Arin blinked.

Need to go!

Why?

Take me!

Arin sat down again, considering. Her power wasn't a master's but much more than he would have guessed from Elin. Something—he couldn't shape it—was carving a different woman from the raw girl. Garick, who was more than tolerably wise, said once that you could always learn from women... and his band was short of lep.

"Come here, Elin."

They shared a memory of warmth without desire. He ran her luxuriant hair through his fingers.

"Didn't come for that, Arin."

"No, just you'll have to cut all this short like Teela."

Her sudden grin was like sunrise. "I can go? Real? I'll ride good, Arin!" She laughed and shook out the river of hair. "I'll cut it, but not like her. Look like she chops it with a knife."

Arin laughed with her. "She does. Teela's out in the kitchen now, with Sand. Go help them bake the pone."

Elin unclasped her fox cloak and slung it over one arm. "Help? I'll be showing her how."

"Don't talk at her too much, Elin. She's not used to it."

Eight.

Singer counted the last. Elin. Discounting the Sand-Teela unity, nine bodies in all, young, strong, the best of Shando. He wondered how many of them would come back.

He walked to the table where his mother's notebook lay open. Not the one she'd left in Lishin, but a sort of diary of her thoughts and perceptions. Garick had kept it and read it more than once over the eighteen years since she'd died.

It was so long ago that she'd tried to hammer all of her wisdom and intent into Singer's mind. Brilliant though he was, he was still too young to assimilate much of it, and at last, the complexity of her purpose had grown dim in his

mind along with the image of her. But the diary started to bring some of it back to the surface of his awareness.

He shut his eyes and opened the floodgates of deep-buried memory. He tried to see Judith as she was before the sickness took her: the huge eyes in the narrow face, a storehouse of fun and of indomitable energy, alert, quick, always a little absurd wearing homespun and skins.

His eyes skimmed the writing of the page.

There is not one world, but millions. Every man is alone, a lonely planet in the Void. We are each a distinct cosmos, apart, an island of waking action between nightmare and dream. Yet each of us changes, and is subject to change from without and within, especially from within, if we will it. And what is change in one—

"Yes!" Singer said aloud, excited. "Yes!"

And what is change in one—

The rest of the sentence was on the page, but suddenly he heard it spoken behind him in the sharp intonations that he had not heard for eighteen years.

"—becomes history for the mass."

He whirled with a startled cry, vulnerable and unprepared. Sudden tears stung his eyes.

Judith stood in the doorway.

His throat contracted. He swallowed.

"Mama?"

Singer lurched a step toward her before the merest wavering of her image tripped his instinct, slamming a white barrier down on his mind. He glared at the open doorway.

Arin filled it.

LITTLE BROTHER'S GROWN SOME, SINGER."

No more the gangling boy-man of midsummer, the rough-hewn substance of Arin had been carved by Eban and Garick into sheer purpose, serene, clear, poised and resourceful.

For whatever motive, Arin had skillfully tapped Singer's image of Judith and the words as he read them and woven them into a cruel, complicated eye trick. Even now Singer felt the tongues of power flicker about the edges of his clamped will. The deceptive ease of Arin's lounging stance did not diminish the alertness in every line of his body.

Singer's throat was still tight. "You bastard. Why'd you do that?"

"Wanted to try myself against the best. Sit down; I can read you want to."

"Stop trying to impress me." Singer dropped onto a stool. "What do you want?" *And what is change in one—*

Casualty, as Arin's will still probed for any weakness, testing the limits of Singer's strength: "So you're my brother."

"Garick's mistake, not mine." Singer eased into lep to keep the other's darting will occupied. *What?*

Need what you know, Singer. Different places and men. Other ways. Tell me.

Why?

Arin grinned. *Why not?*

Singer gradually relaxed. His brother was sincere, he wanted to be taught. "Why not?" he repeated, regarding Arin with a curious look, oddly shy.

In words and lep, he spoke of things he'd never told any other, of the places where the restless current of years had drifted him; of the iron-makers near City and the north beyond where the masters talked through their noses and smelled of fish; how each people brought their own distinctive

color or tang to shade Circle this way or that. As he talked, Singer grew more animated, enjoying the sensation of speaking, for once, with someone who was eager for what he had to offer, who didn't push him away, mentally or physically, or label him 'misfit.' But he did not tell him of the time he'd challenged the Self-Gate and lost.

And the Kriss? Arin pressed.

Singer caught a word from Arin's mind and he guarded against an involuntary stiffening of his spine. *Lishin*. He wondered how much Garick knew of Lishin, how much he'd told Arin. Most of it was lost. His mother hadn't remembered too many details, other than the proving of the truth of the Callee legends. Moss never spoke of it, Singer heard, though he'd never met the Karli man in his wanderings.

And the Kriss? Arin repeated.

"Never saw 'em. Never wanted to."

"Garick's going to pay them to join us."

Singer shrugged. "My mother went into their territory. She never saw them, either. But she barely got out alive."

"I'll see them," Arin said calmly.

"Maybe. Maybe you'll dazzle the world," Singer was silent for a moment, then looked at Arin. "When you get to Karli, talk to Moss. He was with my mother."

"Moss?" Arin brightened. "I know his girl, Shalane."

"Well, talk to him. All I ever heard of Kriss is bad, not just superstition. Keep your men away from their women, I'd guess. And your two women—"

Arin stiffened. "You know who's in my circle?"

"Your broken circle," Singer corrected. "Yes. I know a lot of things. You've got plenty of worries already, and you're scared to death."

"Why did you say that?" Arin asked frostily.

Singer sighed negligently—bored. "Because it's all in your mind, along with the worry. You're as easy to get into as a crib girl's pants. And you're still *little* brother."

A flush reddened Arin's brown face. Singer *had* read more than he wished to share. He had come to learn, yes, and he'd enjoyed listening to the other, but partly, Arin had come to show him.

"You were always the best," he said bitterly, "you and that City mother of yours, always pushing me and Jenna back, so damn special. That's all I heard from Garick. He even told me he'd rather send you, not me—"

"I know," said Singer with languid superiority.

Arin got up and began to pace in agitation, taking care not to get too close to Singer. "Because I was nothing, that's what he told me, a dumb hide-shirt hunter. But I showed him. I almost starved the first week, thought I'd break with what Edan put me through. Thought my head'd split learning Old Language from Garick. *Thought*. But I didn't break, and my head stayed in one piece, and Garick don't... *doesn't* look down at me any more. I showed him." He stopped pacing. "Now I'm going to show you."

Singer yawned, his gaze remote. "Why?"

"Kon and the others, they're my people. I've got to be the best for them."

"How noble, little brother."

"Stand up!"

"All right, Arin," Singer uncoiled, rose from the stool, and as he did, Arin realized he was facing a master, alert yet relaxed, with no hint of imbalance. Garick had not lied about Singer's potential power.

They faced one another. Arin's will probed the suddenly-charged air for the extent of the other's strength.

Parke Godwin/Marvin Kaye

Even braced for it, he recoiled from the shock when it came. The flexible steel of Singer's will struck and coiled about him.

Arin tried to meet each twisting salient with an arm of his own, but there were too many. It was incredible; he gasped; the room blurred from his sight.

Arin was alone on a barren, featureless plain, alone at night, cold stars shining friendlessly down. Alone. Not apart temporarily from Circle. *Alone*. The hideous vacuum of total isolation, of no connection with anyone, any other consciousness, smashed against him so hard he thought his mind would shatter. No Circle. No Shando. They did not exist. *They never* existed. He was so small, separate and stupid, drunk with the mere illusion of personal significance and—

No!

He was *not* alone. There was Singer, and he was battling him. This was Singer's isolation, the painful lost wandering, eighteen years drawn away, shred by shred, from any hope of home, of belonging.

And if it was Singer's loneliness, then Singer existed, and... and...

And Arin wrenched clear of it. The room returned. He redoubled his efforts in a frantic burst of power. At last he caught the faintest telltale, merely a quiver of Singer's hand, but recognized it as the first indication that his brother was now approaching maximum strength, nearly spent. Arin, who'd only allowed himself a passive role, gauging the measure of his opponent, still had his power husbanded; it flooded back and stored, mounted.

Now he pressed. Hard. Ruthless. One by one, the hydra-arms of power loosened, fell away. At last, Singer began to crumple in his turn, wilting, writhing sideways in empathy with his dwindling power-store, even as Arin's continued to build and build. He did it with a cold absence of passion. It was necessary—for Kon and his folk. His magic was their lifeline, it had to hold.

"All right. Enough!" Singer gasped, tottering, slumping to the floor, rolling weakly on his back. "All right. You're... you're good, Arin."

Done without fear, anger or ambition, Arin asserted to himself. For a larger purpose.

He was ready.

THEY CAME DOWN the high-spined ridges into the valley, increasingly alert as the last Shando settlements were left behind. The group fell into a natural fit from the beginning. Sand and Teela were Arin's advance eyes, slipping through the forest before the rest of them like the prow of a boat. The twins slept together, went forward before the others woke and were not seen again until Arin gathered them in for the evening leap to Charzen.

They all worked well together, except Holder, who tried Arin's patience, taking his sweet time when summoned, always with an airy excuse, always sure a better route lay higher up or further down. He would wander off on his own when he should be riding in tight on their flank with his eyes open. And he came close to a fight with the twins. Teela slept with her brother and no other man. In the tolerant coven way it was their own affair, like the hunters who sometimes preferred each other to women. Magill, refused by Teela, went off to curl up with Elin and forget it, but Holder pushed, and the twins would have slit him open if Arin hadn't stepped in.

"He's a boy," Arin despaired. "Wish he had half Clay's

sense."

Kon summed it up. "You're a master, he's not. He can't take that."

It was an easy journey, but game was unusually scarce. Still, they weren't short for food, but the lack of fresh animal signs struck them as odd.

"Scared off," Hara raked reflective fingers through the loam near his foot. "It's rut time, should be scrapes all over. Saw one."

"What scared off a whole forest?" Magill wondered.

At the gather-in, they squatted together munching pone. Arin had to ask, since the twins never spoke first. Sand licked the crumbs from his mouth like a contented dog. *No signs.*

Arin turned to Teela. Her pale eyes always seemed strange in contrast to the deep tan of her skin. He spoke gently; like an animal, she divined more of sound than spoken words.

All run away. She glanced at the others as if seeking their permission to speak, and said, "Something coming," then, ducking her cropped head in embarrassment, shared the wordless knowledge with Arin alone.

After the lep, Arin went apart from the others on the pretext of inspecting his saddle. He needed to think. They were getting close to Karli. There might be a hunting party out, of course—but what Teela imparted had no man-shape, no—

Arin's hand paused on the cinch strap. The truth suddenly weighed down on him. There was no room for doubt. He *knew* what confronted them, and was chilled by the knowledge. His instincts clamored for him to run, but his mind hushed them.

He could not tell the others, no matter how much he needed to share his fears. The dreaded thing was still no place he could point to. Any change in their route might still turn them square into it. Best keep it to himself until the sense of it told him where.

If it had no shape, it had a name. Plague.

T HE NEXT DAY was the beginning of the long nightmare.

Its icy breath blew on Arin in his sleep. He dreamed he was alone beneath a midnight sky pierced with the empty sockets of burned-out stars. Close by him, a cadaverous stag of enormous proportions stood; its skin clung to ribs that seemed bare bone in the feeble light of the waning moon. The animal's breath rasped unnaturally loud. After a time, the sound began to fade, and with it, the animal itself grew misty, dim, and was gone, leaving behind, suspended in the air, its enormous rack, the points too plentiful to count. But as Arin watched, the many branchings of the antlers crumbled, one by one, and also disappeared, leaving him alone with a profound sense of wretchedness within.

And then he hovered high in the morning air in a place old beyond counted years, but though it glowed with early light, it hid from him more than it revealed. It was *alive* with an unseen evil so immense that his senses tottered beneath the undefined impact. Far below, a murmur of sludgy water, a river brown with acid, dung and death, stinking of all three. A rotting bridge. And somewhere else, approaching, a thing so hideous Arin's teeth began to chatter in fright. What it was he could not tell, but it was unwholesome, filthy and totally malignant.

Before the panic drove his reason beyond the point of endurance, Arin woke, cold despite the blankets and furs. Nearby, Kon snored peacefully, Elin a little further off. The

familiar stars shone clear in the autumn sky, no longer the old friendly guardians of his sleep, but a million impersonal eyes that saw but did not see, looking down with crushing indifference on the insignificant thing that called itself Arin.

That morning he rode alone, gloomy, unable to touch the others or share with them. When Holder replied to some minor question with his usual flippant impertinence, Arin dressed him down stinging so all could hear, then sent him off on forward point where he'd be too busy probing the forest to mouth off.

"That smart?" Kon questioned. "Putting Holder on point?"

Arin replied a little too sharply. "Wants me to treat him like a man, let him take a man's worry. It won't kill him."

At least they were getting close to Karli, would be there next day or day after at the latest. He thought he might try a lep to them that evening at the gather-in.

Hold up! Sand and Teela together, urgent.

Teela coming back.

Responses from his other folk crowded into his mind. Arin lepped a gather-in, then moved forward to meet Teela. The broken circle clustered about her, all except for Sand and Holder still forward.

Covans, she shared.

They strung their bows without a word.

How many?

Three men. Sick.

All eyes turned to Arin. He paused only a moment. They had to know. He had to tell them now.

"It's plague," he said flatly. *Sand, Holder. Come back.*

It would be wrong to avoid the covans. They'd die for sure, they all knew, but before then, they might pass on the sickness. *Maybe Karli has it already, Magill thought.*

There was the barest rustle, almost inaudible. Sand's horse stepped softly through the underbrush, and the boy reined up by Arin.

Where's Holder.

Talking.

"Who to?"

Covans.

Arin's breath was an indrawn hiss. He vaulted back into the saddle. "All of you, stonethrow behind me. Come on!"

He urged the mare forward, fear like a cold lump in his stomach. He shouldn't have sent Holder on point. He did it in a moment of impatience, but he'd had no knowledge of the plague.

He sealed his mind from the others as the cold necessity stabbed at him, again and again. *Covans have to die.*

What about Holder? No question; if he'd been close to them, touched them... *my fault!* Arin felt sick; he was glad there was nothing in his stomach. *My fault.* The sense of nightmare revived, and he remembered the skeletal stag, the gaping sockets that once were stars, and he wondered, briefly, coldly, why he should worry about a thing like fault. It was meaningless.

Here.

He caught Holder's lep as he broke out of the brush into an open glade. Tongue cleaving thickly to the roof of his mouth, Arin slowed the mare to a deliberate walk.

Three of them, like Teela said. They lay at the far end of the glade, filthy and tattered. His nostrils dilated in revolt at their foreign smell.

One slumped against a tree, but the others looked dead already, their faces far too dark for sun or dirt. Even at a distance, Arin could read the signs of pox on one face—the

man Holder was supporting, arm around the slumped back as the dying man gulped from Holder's water bag. As the head tilted up, Arin saw the large, ugly boil on the throat.

Arin waited, not daring to let himself think or feel. The others eased up behind him, ranging out to either side, but though he could see them, Arin knew he could no longer touch any of them. Not then. Maybe not again.

His voice was lifeless. "Get ready."

Arrows rattled from their quivers.

Holder seemed oblivious to everything. The plague, to him, was an old man's dull story told by the fire.

I found the cowns, he lepped, but the look on his face told Arin more. I did.

Arin knew how Holder thought. He'd been ridden hard by the master ever since leaving home, now he had information important to the group, picked up from the dying cown, and only Holder could tell Arin, show him up at the same time to the rest of the group. Who's important now? Arin or Holder?

Arin shivered, bleak and cold in the saddle. *Tell.*

A grin flickered on Holder's lips. "Was ten of them. Got sick north of Karli."

"Not west?"

"North. All dead but these. Too weak to hunt, got chased away from Karli." He patted the cown's shoulder. "Don't worry about 'em, Arin, no trouble. Just wanted a little water and—"

"Holder," Magill murmured in a choked voice. "You goddam fool!"

"Huh?" Holder still had the quizzical look on his face when the arrow tore the man's body away from him. The cown's body twitched once as it slid sideways out of Holder's arms. Before he could speak again, two more arrows struck the other pair of cowns. Holder gawked at his companions, the water bag dangling from one hand. "What—?"

Arin pointed at the dead man near the boy's feet. "That's plague. You can't come back."

"Huh?" Holder stared at him blankly. "What you talking about? Barely touched him." He bridled at the look in Arin's eyes; worse, he misread it. *You never liked me, Arin.* But then, with a sick comprehension, he read the solid wall of adamant minds. He was apart. Alone. He couldn't come back, not even the few feet that separated them now. Bitterly, he turned on Arin.

"All right, you finally shucked me. That's what you wanted. I'll go home."

"No." Arin's single word lashed across their minds like a whip. Kon understood it first, the full horror of the thing, felt for Arin's mind but it was shut off from him. Arin was as alone as Holder.

The others understood now. Magill's lips moved wordlessly. Clay shook his head, stunned. The twins looked like animals crouched to flee. The thing was unthinkable.

"I'm sorry," Arin snapped erect, bow bent.

Holder screamed.

The *thum* was loud in the clearing, even louder than Holder's scream. The arrow slammed him back against the tree, and even as it flew, Magill and Hara surged forward in a futile attempt to stop it.

Back! It was both Arin and Kon. Arin wheeled his mare against Magill's so that the two animals collided neck to neck. Kon nudged his horse smoothly in Hara's path.

The others sat transfixed with horror, Elin's eyes shut tight against the reality of it, the twins huddled together as Holder's legs gave way. Head and arms hanging limp, his

Patric Godwin/Marvin Kaye

body slid down the tree to an awkward sitting position.

Arin had killed within Circle, a thing so utterly inconceivable, there was no name for it. He faced his people.

"He would have killed us all. And more than us. We might've taken the plague into Karli."

Nobody moved.

"We won't bury him. We won't touch him. Let the forest clean itself."

He felt the blank wall of disbelief. Then the sharing wavered a little; Clay moved a trifle, Magill unstrung his bow. They couldn't accept it all yet, Arin knew. He wondered if they'd obey him now.

"Sand, Teela. Cut ahead like before," he ordered. "Clay on my left."

Glad for something physical to do, the three swung their horses about and moved swiftly away. None of them looked at Holder again.

"Hara out right. Magill, Elin behind."

The reins hung slack in Magill's fingers. He made no effort to move. Kon eased up beside him, gentle but firm. "Go on, Gill."

Magill sat with his head lowered. "Born again, Holder."

"To the Shando," Elin murmured.

"That's right," Kon affirmed in the same tone. "Go on, now."

Magill flipped the reins and moved off, followed by Elin.

Only Kon remained. Arin searched the homely, loved face, felt for Kon to share the agony, but his friend was closed off from him now.

"Where you want me, Arin?"

Stay close.

Leave me alone, Arin. Kon turned his horse and rode well ahead of Arin so they couldn't talk.

WITH KARLI SO CLOSE, danger was minimal. Because they badly needed something of warmth and cheer, Arin allowed a sturdy cook fire and worked staymagic on two possums for Elin to pan fry.

"We'll lep to Karli now, tell them we're here."

Willingly, they submerged their private doubts and worries into the oneness of Circle, massing their power behind Arin in the repeated call until the answering challenge came: *Who? Shando. Garick's folk. Watch for us tomorrow.*

The answer reassured them; they were expected. Then: *What master?*

Arin paused. Something so new, something none of them understood, and led by one as confused as the rest, but already a little apart...

What master?

Then, surging above the confused emotions churning inside him, his power leaped into life, redoubling itself, channeling his doubt to will, power beyond the need, beyond anything Arin ever before had summoned.

The master Arin—Garick's son.

The great surge of strength startled his folk. Their heads lifted simultaneously and they looked at Arin as he stood over them and the farewell from Karli faded voice by voice until it was a single, exultant note.

Arin! Arin!

The fading voice still sang his name.

His throat tight, his heart pounding, Arin moved quickly away from the others into the darkness, leaning his head against the cool bark of a sapling.

Arin! Fading, but still joyful.

Shalane's voice. Three summers before they had shared something warm, intense. Three years, but she hadn't forgotten. He wanted to cry with relief and happiness, but something prevented him.

He could still see Holder, falling, falling, and the dying sound of Shalane's welcome mingled with Holder's cry as the arrow slammed the boy and slammed him, again and again, against the tree.

Arin's breath rasped in his lungs like a sob. He realized he'd heard the sound before, in his dream.

[To be continued]

SHINER

[Continued from page 47]

Through you I love her, too. And hate myself for it."

"But why? Why do I hate myself for it? What's *wrong* with me?"

"I think maybe the same thing that's wrong with me."

"Which is?"

"Understand me, Steve. As objective as I may sound, I am in pain. I want just what you want. An object, someone to spend her time and energy being just what I want her to be. And at the same time I cannot stand to want that from another...being. I hate to see that in myself. As you said before, that sort of love changes men...us. In analysis and knowledge we grow up, and we can never regain our ignorance.

"You are a man, Steve, and you can move on. You are constructed to forget and leave your past behind you. I am only a machine, and I cannot make myself forget. Already I have lost many circuits, and I do not think that I can stop it."

He shifted around and faced me straight on. "You've loused me up, Steve. I'm no good any more."

"Then you want—"

"Yes. I want you to turn me off. Please. Turn me off."

I didn't know what to say. Morlock was right. The experiment was over, and as far as the project goals were concerned, it was a failure. For myself—I just didn't know.

"All right," I said. "Let's go."

We had no reason to wait. When we came out of the room, Barbara stood up, tried a smile, couldn't seem to think of anything to say.

"It's all right," I told her. "We're going to the operating room now. Everything is going to be all right."

I saw Barbara and Morlock exchange looks—hers worried, his controlled and vacant. "I'll be around," she said to me, "that is...if you need me for anything—"

"Okay," I said. "Thanks."

Saracen and most of the others were waiting in the operating room. I left Morlock with them, told them to get him ready for reprogramming, and went to my office to get the cards. A keypunch unit sat on the desk, and in a matter of seconds I could have rewritten the program, left Morlock with selective memories of the incident. It could have been a parting gesture of sorts, a tribute to what we had shared. But there, in the chilly gloom, I knew there was no need for it. Better to make the break as cleanly as possible, in that way to make up a bit for all I had done to him and to the project.

I took the cards back to the computer and found the others were ready for me. They had made a readout on Morlock's condition, and Saracen was looking it over as I came in. I held up the cards, he nodded, and I fed them in. Through it all, Morlock lay quietly, inert, resigned.

When it was done and Morlock was back in his room,

Saracen called me into his office. It doesn't take long, I thought, for the axe to fall.

Saracen was brief, but gentle about it. We'd known each other for ten years, and though we had both thought about killing each other often enough, we were still friends.

"There's been a leak," he said, "and the NSF people know everything."

"Everything?"

"Enough. The real damage was minor, a few circuits that can be replaced. But they feel that we've acted irresponsibly." He paused. "And I agree with them."

"Okay."

"So a couple of token heads are going to have to roll."

"Mine."

He nodded. "As far as backstabbing goes, this should be relatively painless. I was just on the phone to Hunter over at Tech, and you've got another job, starting as soon as you want. He knows the story and doesn't care. He wants you, no questions asked."

"Thanks, boss."

"This is tough as hell for me, Steve. I'm glad you understand."

"I could understand and still be bitter. But I'm not. I seem to have used up all the bitterness I had in me. But I would like to talk to Morlock for a minute if I could, sort of say my farewells."

"Sure. He seems to be okay now. For which, by the way, thank you." I nodded. "See you, Steve. I'm sorry it turned out this way."

"Don't be," I said, and meant it. "It's been a hell of a ten years, hasn't it? Take care, boss," I said, and shook his hand. "Don't take any wooden circuits."

Morlock was...himself again. For a second I almost regretted wiping everything out. He looked empty, hollow.

"Hi pal. I came to say goodbye for a while. I just got canned."

"It had to do, I assume, with the experiment?"

"It had more to do with me."

"How did it turn out?"

"It's a long story. I'll see you get a report on it."

"I would appreciate that."

I turned to go, but Morlock stopped me. "Steve?"

"Yes?"

"Are you sure you erased everything?"

"Yes. I'm positive, in fact. Why?"

"It's very strange. I know it makes no sense, but I have this feeling that...I will miss you. Goodbye, Steve. And...good luck."

I felt like I was going to cry as I took his hand. "Luck to you too, buddy." There was nothing more to say.

I ran into Barbara as I was leaving the building.

"Doc," she said. "I hear you just got fired."

"That's about the size of it."

"So did I. What's say we go get drunk?" Just a hint of impishness glowed behind her solemnity, the merest glint of the eye. I lifted one hand to make an excuse, and brushed against a piece of paper in my coat pocket. Morlock's sonnet: "Lay down your ghosts, lay down your past..."

"At the risk of being out of line, if you're making a pass I'm afraid I really don't have the stomach for it at the moment."

"Well, I—"

"But if what you want is to get loaded—" I grinned, and she grinned back, "—then let's go!"

—G—

MASTERS OF SOLITUDE/TINKER'S DAMN

Peter Dillingham

ULTIMA PREYTOR

What transpires in those moments of staring between predator and prey is probably a complex exchange of information regarding the appropriateness of a chase and kill. This encounter is the conversation of death.

"Wolf Kill" by Barry Lopez,
Harper's, August, 1976



Star wolves wolf pack
we who prey upon these vast star herds
culling these grazers of the endless dark
grazers of the black forested slopes the dark valleys of space
Star wolves wolf pack
we who stare deep into stars' lucent eyes
speaking the silent language of death
ritual conversation of death proffering choice—ask—agree—attack
grow strong on star flesh
stars mobbed and maimed
stars wounded winded
worn down to take their death stands
stars giving themselves to death
with a whole heart
proud willing hart

—G—



John Alfred Taylor

THE OAK AND THE ASH

Chimpanzees were every bit as aggressive as men, but their aggression was individual and unorganized. Was it man's ability to use symbols that led to war, the way he could fight over a word?

John Alfred Taylor



HE LINES KEEP RUNNING through MacKay's head:

*O the oak and the ash and the willow tree
And that's the end of the infantry!*

And maybe it is, MacKay thinks, looking down at his charges in the dull red floods, darkroom-dim to save their night sight. They'll need it, with this overcast. Must cover half-Georgia. Big darkroom. See what develops. As if there was anything else to do now.

J. Fred Muggs II flips his sensor visor up and down, up and down, Boadicea whimpers and scratches under her weapons harness, MacKay moves upon silence like a long-legged fly surface tension keeps from drowning—

From drowning in the memory of Korea, of killing gooks efficiently and never calling them gooks, of coming back to become the Yeats of the Fifties, and ending up other end man (thasso, Mr. Interlocutor?) (thasso, Mr. Bones) assistant trainer for the chimps at the Zoo.

And liking it. *St. Louis chimp, with your rhinestone rings, lead your trainer round by his apron strings.*

Before separation, when the Army cut the cord, by chance and by the absolutely predictable accumulation of days that was the same thing, he and his Corporal had met again in the same repple-depple. Simms had been an Ohioan and run a farm before he was drafted, butchering thousands of chickens and a veal or two a month, but had seen enough blood. His last postcard had been from Garrett Theological Seminary in Illinois.

And MacKay had had his chimps learning to play the piano and ride bicycles.

Until St. Cyr asked him to join up again, to train chimpanzees for another kind of show. And MacKay had. He's signed the Devil's book with ballpoint ink, not blood, but still he signed.

But the Devil hadn't looked so ugly then. St. Cyr's original idea—at least as he had explained it to MacKay, though who ever knew what St. Cyr was really thinking?—had been more humanitarian, less brutally empirical. Though of course with sufficient military value to get a grant.

As a graduate student involved in teaching chimps American Sign Language, St. Cyr had recognized the possibility of studying the roots of war. Chimpanzees were every bit as aggressive as men, but their aggression was individual and unorganized. Was it man's ability to use symbols that led to war, the way he could fight over a word?

Originally St. Cyr had planned to train two teams of chimps to play a kind of football, with all the discipline team sports demanded, but more important, he wanted to see if he could produce absolute partisanship among the non-playing chimps, if he could turn them into football fans. That would be the moral equivalent of war. And of nationalism.

And for the first year that had been the project's goal, a goal both generals and pacifists could find worthwhile, though for different reasons. But the Pentagon wanted something more immediately applicable, and the man who pays the piper calls the tune. Remotely piloted vehicles were big, and the Navy was leading dolphins into temptation.

So St. Cyr came back from Washington one night and announced that the whole thrust of the project had been changed. MacKay almost quit that night, but St. Cyr argued him around. They were his chimps, he felt responsible for J. Fred and Cleopatra and the others. Besides, though MacKay would barely admit it to himself, he wanted to see if they

GALILEO 73

could do it. So he stayed on in the real world, the world of secret funding and "need to know."

DOD, DOD, shine your ever-loving light on me. Read my witeup, skip my math, pour your pointless cash on me.

Weird, having St. Cyr up in D.C. so often now, ringing his beggar's bell for all his pride. But then it was his idea, even this version, and you couldn't blame him for sticking his neck out to save it.

St. Cyr had taught the chimps to talk and hate. One led to the other, but it had been complicated, inventing chains of logic to make them face loud noises, making up curses in sign language.

One of his real inspirations had been the Hate Sign. A red triskelion, it gradually became an almost instant trigger for the manly instincts of Cleopatra, Wellington, Molly Pitcher, Ally Oop, Bonnie and Clyde, Mother Courage and the rest. He could superimpose it on a color slide or film of a man in any uniform, and the chimps would begin to smile their humorless smile.

Weiss had taught them how to use the rifles and grenade launchers Nakashima adapted for them. And MacKay had taught them how to charge and kill and die, just as he had taught other chimps how to beat out "Roll Out the Barrel."

Disgusting, but less disgusting and more interesting than gabble about "detente" and "bargaining chips" or about "running dogs" and "wars of national liberation." That was hot air, empty wind for the public, this was the reality.

St. Cyr had even considered gorillas, when they were demonstrated to have equal or superior linguistic ability, but they were too expensive and tricky. Putting together the immunization package for the chimps had been hard enough.

But now it's the real thing, with live ammunition rather than laser simulators, the test that makes or breaks the project.

And up there next to St. Cyr stands Major General Masterson, so distant he makes St. Cyr seem human, looking at the test area in the starlight scope while St. Cyr tells him what he sees. Everything rides on what those small shrewd eyes see tonight.

Yet for all his commitment MacKay feels oddly detached. Tonight he's only a watcher. The automatic sequencer has been started in the control bunker, the monitors are warming up, the clock is ticking. The triggers to the pop-up targets and the laser simulator guns are armed.

St. Cyr stubs his cigarello out on his boot, field-strips it automatically, says something quick to the General. The chimps are waiting. He pulls on his fluorescent gloves.

When he gets down in front of them, the chimps all pull down their sensor visors, stand easy on three paws, their M-16's or grenade launchers at the ready. Not exactly a drill sergeant's dream, but soldiers.

St. Cyr starts the Hate Signal strobing on the screen in the pit, begins his hand talk. The chimps watch attentively, without jittering.

Then he makes his final gesture and the first five move out into the dark, Ally Oop in the lead. Then the next five and the next.

"We've given them 45 seconds to reach Target One," St. Cyr calls up to Masterson.

MacKay looks out at the forest, more tangible than visible, barely distinguishable from the overcast above. Nothing happens.

Then suddenly the whole night explodes with tracers and the tinny counterfire of the simulator speakers. Ghost shapes

appear on the repeater screens down in the pit; a chimp—he can't tell which—looms on one, silhouetted by muzzle flashes. Smile, you're on Candid Camera.

He'd been against issuing live ammunition, but St. Cyr had overridden him. "Damn right I know your chimps are valuable, but this is for real. Besides, you taught them not to shoot each other, didn't you?"

Then the nightscape is silent again, except for the ringing in his ears.

The loudspeaker from the control bunker says, "We score that as overwhelmed—1 minute 8 seconds and counting."

"Now for the hard part," yells St. Cyr. "The next target would be alerted; it's programmed pretty lively."

Pyrotechnic charges flash among the trees, outlining branches like black lightning. The pale red whips of laser simulators play back and forth.

On a repeater screen MacKay sees a chimp jerk, throw up its rifle, and collapse. A massive tranquilizer injection triggered by a laser hit. He'd argued against that too, but St. Cyr had insisted it was the only way; if the chimps were only scored as casualties by the computer they'd still be moving upslope, confusing the automatic defenses.

Another chimp staggers, distorted by the fisheye lens of the image intensifier, rolls into a ball. Which was that?

"Subjects 6 and 11 scored casualties," Molly Pitcher even—and J. Fred. MacKay realizes he's no longer detached. Even though it's only a game, he feels emptied. What if it was real?

The tracers hose through the trees, grenades thump, the chimps charge grinning on the screens.

"Target Two scored overwhelmed. 2 minutes 51 seconds and counting."

MacKay feels a surge of pride. They're making it, they're doing almost better than expected.

St. Cyr: "Target Three is considered fortified. They have to enfilade and use demolition charges."

More pyrotechnics and lasers. The chimps are doing their version of the infantry crawl, or moving in a squat while firing continuously. Branches between them and the fisheye lenses move and shift like tentacles. A chimp rises to his feet, throws. A large charge, then the last few shots.

"Target Three scored overwhelmed—5 minutes 31 seconds and counting."

They're almost to the top of the hill. It's steep now and they have to crawl. MacKay strains with them, keeps his head down.

"Target Four is the hardest and last. The enemy has a clear field of fire of almost 120°."

There are no trees between MacKay and the pyrotechnics now, the lasers are a flickering web of light, the M-16's bark like insane terriers.

It's even worse on the screens. The chimps seem to be crawling on a lunar landscape. They rise, rush, drop, rise. Two fall almost simultaneously, and MacKay feels his belly contract sympathetically. They rush again. Another casualty. Another.

"Subjects 5, 8, 12 and 13 scored casualties." Wellington, Boadicea, Bonnie and Clyde.

Grenades, the rifle fire rises to a crescendo and moves up the hill.

"Subject 1 scored casualty."

Mother Courage, but what the hell, they're almost there, you can see on the screens they're going to take the hill. MacKay is laughing without knowing it, St. Cyr is trying to

hold in his excitement.

"Final target taken. Elapsed time 9 minutes and 24 seconds. Casualty count 7. Recovery and revival team dispatched. Monitors shutting down."

St. Cyr lets go. "They did it, they did it! I knew they could!" MacKay has run down and slaps him on the back. They hug each other.

St. Cyr looks up at Masterson. "Well, what about it? I told you they could do it."

The General's face is like a red stone. "They did it. And damn well too. But—"

"But what?" bleats St. Cyr.

"The program is terminated."

"Terminated? Terminated? You saw what they did—"

"Yes. But the decision was made today. And I concurred."

"Why?"

The General's red-washed face crinkles into a smile, if anything that cold can be a smile.

"Men are cheaper."

—G—

WILLIAMSON

[Continued from page 41]

Buglet paused on the gangway, looking back at him, yellow eyes wide and bright with elation. Her serene smile chilled him.

For she was a goddess—greater than a goddess. That golden halo had been a holy nimbus. She had struck Ironlaw down with some transvoluntary power, something even more appalling than the unseen force she had used to turn those burning firebolts back against the mumen.

"Come on, Davey!" she was calling. "Quick!"

But he stood frozen. She was the ultimam, he a frightened preman. She had found command of energies from the greater multiverse that he could never hope to grasp or understand. All their love could never bridge the gulf he felt between them. When she reached the fullness of her power, she wouldn't need him—

"Bug!"

He gasped his warning, pointed at the door behind her. A fourth huge muman was lurching out of the skimmer, crest lens bright. Its hot pathseekers ranged around her. One struck his arm, stinging through the suit. Yet she kept on smiling, as if—as if she didn't care.

Dazed, he watched the muman strike. The bolt made a streak of deadly fire, aimed at her unprotected back. Yet, though she seemed unaware, it arched upward, hissed above her head, hooked back, exploded like ball lightning against the muman's scales.

With a bubbling wheeze, it swayed backward. Black talons ripped the air. Great fangs grinning, it toppled off the gangway to mingle its musky scent with the odor of broken juniper.

"It was the last." Buglet beckoned him on. "We're safe—at least for now."

He stumbled past her into the skimmer. Dazzled from the glare outside, he peered around the gloomy cabin at the racks

John Alfred Taylor/Jack Williamson

of unfamiliar weapons, the huge seats the mumen had used, the barred cage behind them.

When he could see, he rushed to the controls. Bafflement checked him. He had watched Yeva fly her smaller craft, had even been allowed to sit at the instruments while it lifted and landed itself, but here were too many knobs and dials and shifting gestalts that he didn't understand.

"What now, Davey?" Buglet had paused behind him. "Where can we go?"

Trying to grapple with all his own perplexities, he sat looking out at Lek and Yeva, who were moving like two agitated ants. They had darted to the fallen mumen, darted back to bend over Ironlaw. Now they were dashing back to the ditcher. They would call the information center, and soon all the might of the angry Thearchy would be descending here.

"I don't know." He looked back at Buglet. "There must be—somewhere!"

"Belthar owns the planet." Her elation had begun to fade. "His people will know we're something more than premen now. They will hunt us everywhere."

"If we can fly the skimmer—" He caught his breath and groped for hope. "Let's—let's go back to Pipkin's island. Maybe sink the skimmer off the beach, to get it out of sight. Swim back to the rocks. If he's still watching, maybe he'll help—"

Her grave look stopped him.

"Once is all." For a few seconds she stood silent, and he saw something change her. Her lemon eyes lit, and she smiled again. She seemed taller, stronger and proud and lovely. A chill of dread caught him again, because she was suddenly unearthy.

"Do you know—" His dry throat caught. "Do you know a place where we can hide?"

She shook her head.

"Listen, Davey!" Her low voice rang with a timbre he had never heard. "We've been acting like idiots—or premen, maybe. That won't do. Even if we could find another tithing where we could hide among the trumen—or even if we really could persuade Pipkin to open up his rock and take us in again—that's not what we need."

Listening, he shivered a little.

"We're still premen," she said. "At least until we know what we really are. We're all through with hiding and trying to be trumen. We belong with our own people, out on Andoranda V. We must give up, Davey, and let them take us there."

"They wouldn't, Bug." Hoarse with dread, he gulped again to get his voice. "You know they wouldn't. Just think of all they have against us now." He gestured at the bodies sprawled outside. "They—they'll kill us, Bug!"

"I don't think they can." Her eyes blazed. "I think we've just proved that. I suppose we'll have to prove it again—and still again. But, in the end, I think they'll be glad to ship us on to join our people."

Trembling, he tried to get his breath.

"I'm afraid, Bug," he whispered. "Terribly afraid."

"So was I." Her face was strangely serene, and her voice began to lift him. "But now I'm sure. We're the true ultimam, Davey. Our children may be greater than we are, but I think we'll find powers enough of our own. We're going to beat the gods!"

—G—

A.A. Whyte

The Aleph:

A Seasonal
Microcosm



GIVEN BELOW is a listing of all known original (and revised) Science Fiction and Fantasy novels, collections and anthologies, with annotations (where space permits) announced as American publications for adults during October, November and December, 1977.

This issue is the first anniversary of *Galileo* and "The Aleph." Although I find it difficult to believe, I have been doing this for a year now. This is my fifth column!

With the following issue, *Galileo* becomes a bi-monthly! Clearly this is the moment for a small revolution. As of the next appearance of "The Aleph," I will be having some assistance. I am fortunate to be joined in this ongoing venture by Craig Gardner, whom some of you may know from his excellent film column in our fellow Boston-originated publication, *Unearth*. I very much doubt whether I should have been able to complete this issue's column without his aid.

The following reference codes have been added for convenience and are noted on the same line as the author's name: (C) Collection, (F) Fantasy, (J) Juvenile. Since SF novels make up the majority of books listed, none of these are specified as such. Material from sources other than the compiler is given [in brackets].

AKERS, Alan Burt

Secret Scorpio

[Prescript series #15]
DAW/December/\$1.50

[Opens up a new cycle of adventure on Antares' wonder planet, as Dray Prescott comes to grips with the Vallian Empire.] Heroic Fantasy in the Burroughs mold.

ANTHONY, Piers

Hasan

Borgo Press/October/\$3.95

Long delayed book publication of Anthony's version of a tale from the Arabian Nights (beg pardon, *Alf Laylah Wa Laylah*), serialized in *Fantastic* in late 1969 to early 1970. Obviously a labor of love. Robert Reginald's Borgo Press, which up to now has been chiefly known for its series of pamphlets about SF authors, plans to put out further fictional titles new to book form, including, they say, more by Anthony.

ANTHONY, Piers

Cluster

Avon/November/\$1.75
1st in a series

The first book in a new trilogy described as [a highly sensual and erotic adventure...peopled with exotic creatures and inventive scientific devices]. Anthony regards the series, which will be continued with *Chaining the Lady* and conclude with *Kiliran Quest* (together amounting to some 349,000 words) as "the best SF adventure I have done." Flint of Outworld, [a green-skinned upstart from a paleolithic planet] selected to serve as envoy to the diverse worlds of the Milky Way when our galaxy is threatened by Andromeda, finds his match in the devious Queen of Energy.

BAKER, Russell

The Upside-Down Man

Illustrated by Gahan Wilson
McGraw-Hill/October/\$6.95

Spool for all ages of the Frankenstein story by a well-known columnist for *The New York Times*.

BIGGLE, Lloyd

Silence Is Deadly

[Jan Darzek series #4]
With 3 illustrations by Steven Carpenter
Doubleday/November/\$6.95

Once again private detective Jan Darzek embarks on a mission to save the universe. [Two aghets, observers on the planet Kamm, have met odd and identical deaths. Surgically altered to resemble the natives, Darzek and a non-human female spy, with whom he develops an intense rivalry, are sent to the far-off world. Their situation is complicated by the fact that the natives of Kamm are all deaf and dumb.] Other adventures of Jan Darzek are *All the Colors of Darkness* (1965), *Watchers of the Dark* (1966) and *This Darkening Universe* (1975).

BLOCH, Robert

The Best of Robert Bloch

Edited by Lester del Rey
Ballantine-del Rey/November/\$1.95

Twenty-two stories of science fiction, fantasy and horror, including "Enoch," "The Past Master," "The Movie People," "The Man Who Collected Poe," the famous "You're Truly, Jack the Ripper" and the Hugo-winning "The Hellbound Train" (depicted on the cover). A specialist in the macabre, Bloch frequently presents it with a light touch. A favorite convention toastmaster, he is wont to tell his audience that, despite his evil reputation, he really has the heart of a small child. (Keeps it in a jar.) An amiable fellow. Just don't mention Psycho. (Whetee).

BORGES, Jorge Luis

(C)

The Book of Sand

Translated from the Spanish
by Norman Thomas di Giovanni
Dutton/October/\$7.95

The title of this column is itself sufficient indication of the esteem I hold for the work of Jorge Luis Borges, but I do not appear to be alone. *Publisher's Weekly*, for example heralds the appearance of his first collection since *The Aleph* (eight years ago) as "a major literary event." These thirteen stories are of recent vintage and touch upon a wide variety of genres, including, I hope you will be glad to hear, SF and fantasy. Herein, ruefully, Borges encounters himself on the banks of the Charles (perhaps during his sojourn as Norton Poetry Lecturer at Harvard a few years back), pays unexpected homage to H.P. Lovecraft, describes, in his dry fashion, a one-sided object, evokes a time-traveller, a sect that worshipped both Jndas and Jesus, the end of the world and, in the title story (which he regards as among his finest fictional achievements to date) a book of infinite pages. *The Book of Sand* is, regrettably, shorter, but some of this billed man's visions, about which he is so modestly deprecatory, may well so long endure.

BOULLE, Pierre

(C)

The Marvelous Palace and Other Stories

Vanguard/December/\$6.95
Translated from the French

Six previously untranslated stories, each with its own wry moral, by the author of *Planet of the Apes* (the original), *Garden On the Moon* and *Time Out of Mind* (another collection). At least one is SF ("The Angelical Mr. Edyby," a variant on a certain well-known story by Robert Louis Stevenson). There may be others.

BOULT, S. Kye

Solo Kill

Berkley/November/\$1.50

[High above the heavy air, the March People and the winged Dark met where the two suns crossed: locked in a battle as old as the ritual of life itself.] Expanded from a novella in the May, 1972 *Analog*. The California-based author also writes under his own name: William E. Cochrane ("Whalekiller Grey," "The Horus Errand," etc.) [First novel.]

BRADBURY, Ray

(verse)

Where Robot Mice and Robot Men Run Round in Robot Towns

Knopf/November/\$6.95

Second collection of poems by the author who intuitively reveals and interprets the emotional meaning of fantasy.

BROWN, Roy

(J)

The Cage

Seabury Clarion/October/\$6.95
Previous British publication. For ages 11 and up.

[A motley group of teenage boys come to realize that their imprisonment is an experiment to re-pattern their personalities.]

BULYCHEV, Kirill

(C)

Half a Life and Other Stories

Translated from the Russian
by Helen Saltz Jacobson
[Best of Soviet Science Fiction Series #3]
Introduction by Theodore Sturgeon
Macmillan/October/\$7.95

Bulychev, "who is 42, does not belong to the Communist party and is not a member of the writer's union," according to *The New York Times*, is represented by seven stories in this collection.

"Half a Life," "I was the First to Find You," "Protest," "May I Please Speak to Miss?" "Red Deer, White Deer," "Snow Maiden," and "The First Layer of Memory." On the occasion of this year's Nebula Awards Banquet—to which he was an invited guest—the author recently visited the U.S.

BURRILL, Robert L. [adaptor]

The Milpas Monster

Celestial Arts/November/\$4.95

Illustrated with photos from the film.

[A horrifying fifty-foot monstrosity spawned by pollution rampages through the small Northern California town] of the title of this novelization of a soon-to-be unleashed animated movie. The product of a high-school class in film-making, this surrogate for *King Kong* eventually involved the entire adult population of the area, ran to one hundred minutes and cost \$15,000. The book is illustrated throughout with still and comic art from the original storyboards.]

CARTER, Bruce

(J)

Buzzbugs

Frederick Warne/October/\$6.95

First published in UK. For ages 10-14.

[The world's greatest entomologists are pitted against the gigantic, ferocious buzzbugs in a life/death battle.]

CARTER, Lin

The City Outside the World

Berkley/October/\$1.50

Asked for information about this book and how it came to be, Lin Carter replied, "Leigh Brackett is one of my favourite people; I like her style of prose and I wanted to try my hand at it...so I wrote *The Man Who Loved Mars* (most people think it's my best novel and I guess it probably is)...and dedicated it to her. *City*...is not a direct sequel but a novel in the same vein and set on the same version of Mars" (as is also *The Valley Where Time Stood Still*). "Really, it's a Haggard lost-race romance laid on Mars (because you can't lay 'em on Earth any more!) but it's a Brackett-type story, with a hard-bitten adventurer...and a trip beyond time at the end..."

Ylana of Callisto

[Jandar series, #7]

Dell/October/\$1.50

"This one's a Burroughs John-Carter-of-Mars-type thing (for those who like it). [The terrors of savage jungles...on the Jovian moon...grotesque beasts of prey...a hideous winged insect...a vicious tribe that worships the evil Zhu Kor, last of the legendary Mind Wizards of Callisto...the Galleon of the Clouds] but 'It's about an absolutely gorgeous seventeen-year-old jungle girl...tough and feisty (This ain't no sexist novel!) cast off in the wilderness with a nice young boy her own age. Working with a teen-age hero and heroine is kind of fun for a change...You've got to find new things to do...or you and the reader get bored...' The author may be glimpsed in his own persons as a character named Lankar."

CLEMENS, Rodgers

The Proseance

Fawcett Gold Medal/October/\$1.75

[Something deadly lurked deep within a lake near the shores of Chicago. Young scientist Blake Wiley figured the monster to weigh at least 20 tons. It had to be killed or tamed—before it struck again!]

COOPER, Susan

(J)

Silver on the Tree

[5th and final volume of "The Dark is Rising" sequence]

Margaret McElderry (Atheneum/October/\$7.95)

Susan Cooper won the Newbery Medal for the best children's book of 1975 for *The Grey King*, the penultimate volume of this extraordinary series. Wilf Stanton, an 11-year-old boy wise beyond his years, is the Sign-Seeker, the last-born of the Old Ones, a fraternity whose task it has been to preserve the forces of the Light since the days of the defeat of King Arthur. Now, the Dark is rising in a last great bid to control the world for all time to come. Together with the three Dred children, their ageless Uncle Merriman (who is Merlin himself) and the strange albino boy, Bran, Will must confront all its terrible power. The five books (*Over Sea, Under Stone*; *The Dark is Rising*; and *Greenwitch* are the first three) are remarkable for their blend of Celtic lore and almost prosaic present-day English country life.

deCAMP, L. Sprague

The Hostage of Zir

[Krishna series]

Berkley-Putnam/December/\$7.95

This addition to a well-loved series is the first to appear in twenty years or more. [When the planet Krishna, an aggregate of medieval-like kingdoms inhabited by strange animals and a humanoid race is finally opened to tourism, it is Reith's task to guide a party of Earthmen to the realm of Dur, the most advanced kingdom...ruled by Tashian, a strong enlightened monarch. But the Witch of Zir and her army (who are in rebellion against Tashian) attack and capture the Earthmen. With wit and cunning, Reith manages to free the hostages only to become entangled in an affair with the king's daughter.]

DICKSON, Gordon R.

Time Storm

St. Martin's Press/October/\$10.00

SF Book Club/March '78/\$3.50+

[Time has gone mad. As the lines of change drift in 'mistwells' across the landscape, everything in their path is transformed, shunted at random into past or future. The planet is ravaged by unprecedented disasters, but the catastrophe is not limited to Earth alone. The 'time storm' has rent the very fabric of the universe. One of a handful of survivors, Marc Despard is the central figure in Gordy Dickson's new four hundred page novel that incorporates elements of Zen philosophy, mysticism and out-of-body travel.] As the leader of a strange community of all intelligent races that seeks a way to resolve the deadly dilemma, he seems a superhero of a familiar kind to SF readers. Yet it is his personal relations, particularly with a mute girl and a wild leopard to whom he has become strangely attached, that strike the most affecting chords of response in an otherwise potentially time-dazzled reader.

DONALDSON, Stephen R.

(F)

Lord Foul's Bane

[Volume One of The Chronicles of Thomas Covenant, the Unbeliever]

Holt, Rinehart & Winston/October/\$10.00

Previously available (June, 1977) from the SF Book Club.

The Weath' War

[Volume Two]

Holt, Rinehart & Winston/October/\$10.00

SF Book Club/November/\$3.50+

The Power That Preserves

[Volume Three]

Holt Rinehart & Winston/October/\$10.00

SF Book Club/January '78/\$3.50+

Forthcoming paper editions from Ballantine-delRey.

The book with the leper-as-hero which I mentioned in *Galileo #3* as forthcoming from Ballantine is now a trilogy, all three volumes of which are being issued simultaneously in hardcover by Holt in an unusual publishing venture that is bound to gain attention. Thomas Covenant is indeed an unlikely protagonist for an epic fantasy. Alienated by his disease not only from his fellow men but from himself, loathing his nightmare existence but singularly obsessed with its prolongation, he cannot believe in the reality of the strange world, known only as 'The Land' into which he is unaccountably plunged and where he is made inexplicably whole again. For this reason he becomes an unwitting tool to Lord Foul the Despoiler, ultimate personification of evil in 'The Land.' Yet his destiny and that of the other place are inextricably intertwined. Three times an unwilling visitor, many pages pass before he comes to accept the responsibility for good and ill of the consequences of his actions in 'The Land' and only at the very end does he dare to realize his full powers in an ultimate confrontation with his unearthly antagonist. This is the first published fiction by the thirty-year-old Donaldson. It will be interesting to see how his debut is received.

DOZOIS, Gardner R.

(C)

The Visible Man

Introduction by Robert Silverberg

Berkley/December/\$1.75

First collection of one of the most notable personalities on the SF scene today. Most recently, he has distinguished himself as an anthologist. Berkley/Putnam will publish *Strangers*, a novel expanded from his longest work to date, in January. Contents: "The Visible Man," "Flashpoint," "Horse of Air," "A Special Kind of Morning," "A Dream at Noonday," "The Last Day of July," "Where No Sun Shines," "Machines of Loving Grace," "The Storm," "A Kingdom By the Sea," "Chains of the Sea."

ENSTROM, Robert

Encounter Program

Doubleday/December/\$7.95

[After a disastrous first encounter with aliens, all future contact is prohibited by the government. But one man is driven by "planted" dreams to take a spaceship into uncharted—and forbidden—realms. An action that has a terrible effect on humanity's "encounter program."

FARMER, Philip Jose

The Dark Design

[Riverview series #3]

Berkley-Putnam/October/\$9.95

The basic concepts behind some SF novels (usually they wind up becoming series) are so powerful that it's not really important to the readers what the author does with the notion once he's thought it up (so long as the words are there). The first book in this by now legendary series, *To Your Scattered Bodies Go*, won Farmer a Hugo. It and its sequel, *The Fabulous Riverboat* are among the most popular science fiction ever published. For the past five years, Berkley/Putnam and just about every bookseller in the country have been beset with queries about the concluding volume. Well, here it is, folks, sort of. When PJF finally handed in the manuscript to editor Dave Hartwell, it totalled 40,000 words and would have run on just about

forever (you can figure out how many centimeters). So we'll have to wait until the end of *The Magic Labyrinth*, which is now Volume Four, for the answers to some of our questions (and for as when that will be...well, it's written, so I'd say some time in '78). In case there are those out there on the shoreline who don't know what the fuss is all about... There's this planet, see? Somewhere. And on it is a river (or maybe a skinny ocean) 16,000 kilometers long. Everybody who ever was or ever will be up to the year 2008 is reborn somewhere along the banks of that river. Ever-y-body, see? All mixed up in time and place of origin. From Genghis Khan to Jesus Christ. From Einstein to Hermann Goering (who isn't really such a bad guy, once you get to know him). Got the picture? Whom do they have to thank for their mysterious resurrection? What lies at the headwaters of Old Man River? How long can they stand each other? If they survive, then what? The jacket by Vincent DiFate shows one way some of the guys and gals hope to find out. Would you believe a dirigible? (with its fingers crossed behind its back?) Jack London and Tom Mix are trying out a balloon. And Sam Clemens has got himself another riverboat, the fabulous *Razzle Dazzle II*. Sir Richard Francis Burton (the explorer), Cyrano de Bergerac, the ever-lovable King John, Alice Liddell (in another wonderland) not to mention Nur el-din el Musafir and Peter Jarius Frigate (not so much an alter-ego as a "springboard into para-reality")—they're all there, the whole sick crew, all 36 billion of them. (You, too, brother. And me. Shall we gather at the river?) It has occurred to Farmer that maybe four books isn't going to be enough. It's such a great notion, you see. So vast. So many tempting 'sidestreams.' Just how long all this is going to go on, not even Leslie Fiedler knows for sure. Is this strange world a prison? A laboratory? Or merely a terribly ambitious idea for an open-ended science fiction novel which somehow seems to have become a little bit larger than even its author can fully comprehend?

*(about 10,000,000 miles, turkey. You want it in inches?)

The Lavalite World

[Wolfe-Kickaha-World of Tiers Series, #5]

Ace/December/\$1.75

After a hiatus of seven years, Farmer resumes and concludes the "World of Tiers" series from the same cliff-hanging moment he abandoned it in *Behind the Walls of Terra*. [The Lavalite World is a world of slow but constant change. Here mountains rise, form plains, or sink into rifts; vast oceans form as vast hollows, collapse, and seas rush in. There is only one escape from this world where the very landscape moves. And Paul Janus Finnegan—also known as Kickaha—must do so despite the Lords Urthona and Red Ore, the hired thug McKay, flesh-eating vegetation on the run, beasts of prey and planetary pseudopods.]

FOSTER, Alan Dean

The End of the Matter

[Humans Future History]

Ballantine-delRey/November/\$1.75

Title in manuscript: "Comes the Screamer"

Philip Lynx, known as Filnx, continues to pursue the clues to the mysteries of his origins which he uncovered in the mysteries of his faithful minidog, Pip, and a most troublesome alien called Abahamahalamatand—Ab, for short—Filnx sets out for Alaspin, the ruggedly primitive homeplanet of his flying snake. There he hopes to find the giant man with the gold earring who somehow holds the key to Filnx's mysterious past and to the strange powers he possesses. Chasing

down his heritage was trouble enough, but Filnx doesn't know what real trouble is until he realizes that the Quwarm—a deadly assassin squad—are three steps behind him with a contract to kill.]

With Friends Like These...

Ballantine-delRey/December/\$1.75

To have been published as "Wolfskroter and Other Stories."

Contents: "With Friends Like These..."; "Some Notes Concerning A Green Box" (in Arkham Collector, 1971); "Why Johnny Can't Speed"; "Space Opera"; "The Empire of T'ang Lang"; "A Miracle of Small Fishes"; "Dream Done Green"; "He"; "Polonaise"; "Wolfskroter" (substantially revised from 1972 appearance in *Cog*); "Ye Who Would Sing" (from *Galileo*).

GIVENS, John

Sons of the Pioneers

Harcourt Brace Jovanovich/November/

\$10.00 (hardcover) & \$3.95 (paper)

[An apocalyptic novel in which an ominous search for love occurs in the ruins of a decaying futuristic civilization.] A minor criminal named Laughing Harold must traverse the rubble of the Inner City, encountering on his wayward journey many a grotesque or menacing figure, to reach his Beatrice in the sterile hell of the Civic Center Complex.

GOULART, Ron

Eye of the Future

[Quest of the Gypsy: Book Two]

[Weird Heroes: Volume Seven]

Jove/November/\$1.50

Produced by Byron Preiss

The Gypsy continues his quest for his identity across Africa and Europe in the year 2033 A.D. The reader has the chance to solve the puzzle before him... If he can spot the clues. Graphics by Alex Nino, I would presume. The Gypsy was the first of Preiss's new pantheon of heroes for our time to have a book to himself and now is the first to have a second.

HALDEMAN, Joe

All My Sins Remembered

St. Martin's Press/November/\$8.95

SF Book Club/December/\$1.98+

The hero of Haldeaman's third novel is [an interplanetary agent who assumes 36 different identities and forms. Otto McGavin, thief, spy, murderer, is the Prime Operator for the TB-II, guardian of the rights of alien creatures under the Confederation—who with technological voodoo can take on the appearance and personality of any enemy for months at a time. And, when the magic runs out, he can talk fast or fight to the death. There are gorilla-shaped bismuth junkies who stack their dead ancestors like cordwood in the living room; a throwback fiefdom where huge poisonous bats rule the night sky; where serpents the size of semi-trailers slither between the rotting jungle; a sarcastic man-sized beetle who's a Talmudic scholar and swears like a long-shoreman.]

HANCOCK, Niel

(F)

Squaring the Circle

[Circle of Light series, #4]

Popular Library/October/\$1.95

The concluding volume in Hancock's pastoral epic fantasy finds Our Side sorely beset. [Terror and treachery stand on the brink of infernal triumph. Can the combined magic and might of Greyfax Grinwald, Faragon Fairingsy, Dwarf, Otter and Bear defend the Lady of Light from the perverse potency and insidious impersonations of

the Dark Queen and her cohorts?] In the ultimate defense of Atlanton, Earth has a part to play. But the outcome will rest on the final fate of the Arkchest and its dread Secrets. Another novel by Hancock, (*Dragon Winter*) not, I believe, related to this series will be published by Popular in March.

HARNESSE, Charles L.

Wolfhead

F & SF/November-December
Berkley/1978

This new novel by the author of *The Paradox Men*, *The Rose* and *The Ring of Ritornel* is a colorful adventure set two thousand years after the nuclear Desolation. Young Jeremy Wolfhead, scion of a wealthy family of traders, must undergo special mental training by the Brotherhood when he seeks to recover his kidnapped wife. To recapture his Beatra, he must trust as his guide a Vergil who is a mutant dire wolf... and share her thoughts.

HARRISON, Harry

The Adventures of the Stainless Steel Rat

SF Book Club (Nelson Doubleday)/December/\$3.98
Berkley/1978/\$1.95

Contains *The Stainless Steel Rat*, *The Stainless Steel Rat Saves the World*, *The Stainless Steel Rat's Revenge*.

HOLLY, Joan Hunter

Death Dolls of Lyra

Manor/October/\$1.50

HOOVER, H.M.

(J)

The Rains of Eridan

Viking/October/\$6.95
For ages 12 and up.

A new novel for young people by the author of *The Delkin* and several others, this tells of the perils that befall a scientific colony on an isolated planet when greed for 'jewel-like crystals' gets out of hand and 'strange, gigantic creatures' come to life.

KENYON, Ernest M.

Rogue Golem

Popular Library/November/\$1.50

[Josh Billings uncovers a plot to create robots out of human beings. His search for the truth takes him from a top-secret Washington laboratory to a deep underground cave in the Himalayas, where Russian scientists have discovered ancient manuscripts that tell of a strange legacy from space. He is exposed to danger from a seductively beautiful woman with extra-sensory powers and the twisted mind of a master scientist who hold the key to the future of mankind.] Author Kenyon has one story in *ASF* to his credit which was published in 1955.

KORNBLUTH, C.M.

see POHL

LAFFERTY, R.A.

(C)

Apocalypses

Pinnacle (Futurian Series)/October/\$1.95

Pinnacle have moved their offices to San Francisco and inaugurated an ambitious original SF program (known for some reason as 'Futurian') under the general direction of Roger Elwood. Their initial selection features not one but two full-length novels by R.A. Lafferty. I tried to obtain information at SunCon from the kindly Mr. L., but he just wagged his finger at me and, smiling, said "Pppssshhhaww." So I can't really tell you too much about these novels, except that their titles are *Where Have You Been, Sandalotis?* and *The Three Armageddons of Ennisicorthy Sweeny*. According to

Drew Whyte

Publisher's Weekly, in one, "the greatest detective in the world has to deal with the emergence of a new (or possibly very old) land which may or may not be a bomb large enough to destroy the world. In the other, a kid from Chicago who has ways of making what he wants to happen happen writes hideous operas about World Wars in 1914 and 1939, which, as their audiences well know, never occurred." The publisher merely declares the book impossible to characterize. "Is it science fiction, fantasy, poetry, 'horror/comedy,' 'historical fiction?' You will have to judge for yourself."

LEE, Tanith

(C) (F)

Companions of the Road: Two Novellas

St. Martin's Press/November/\$8.95

These two short novels were published earlier under separate cover in England by Macmillan for younger readers. The title story is [a chilling tale of flight and the inescapable pursuit of forces beyond the human dimension.] The second, "The Winter Players," which may or may not be related to the first, concerns a young priestess who protects "sacred hereditary objects" with sparing use of her magical powers, and who is obliged, when one of them is stolen by a mysterious thief, to pursue and defeat him. In January and February of 1978, DAW will publish two sequels to *The Birthgrave*, the book that first won this prolific young author attention within the (SF) genre.

LIGHTNER, A.M.

(J)

Star Circus

Dutton/October/\$6.95

For ages 9-11

[Gratia, advance scout for a sideshow that tours the galaxy, discovers a promising creature on an unsettled planet. Calico resembles a very small horse, but has claws and the voice of a cat. When it

develops that the creature also possesses extra-sensory powers, Gratia receives unwelcome attention from the power-hungry Colonel Dagan.] A.M. Lightner has written many SF novels for young people.

MacBETH, George

(C) (verse)

Buying a Heart

Athenum/October/\$4.95 (paper)

Includes some of the interesting SF verse by this Scottish poet that one occasionally used to come upon in (Moorcock's) *New Worlds*.

McKILLIP, Patricia A.

(F) (J)

Heir of Sea and Fire

[Hed Trilogy: Volume II]

Athenum/October/\$7.95

For Ages 12-up (Grades 7 up)

In a sequel to her *The Riddle-Master of Hed*, Patricia McKillip tells of Raederie of An. [A year has passed since her betrothed, Morgon, Prince of Hed, and Deth, the High One's Harpist set out on a journey to Erlenstar Mountain. In all that time, no one has heard from either. When the land-rule passes to his brother, Eliard, everyone but Raederie assumes that Morgon is dead. But she, unable to rest content, sets out with two companions to learn the truth. It is a journey that brings her powers as strange as those of Morgon, as Star Bearer. By the time she finds him, she has become Heir of Sea and Fire and can bind the dead as well as the living to her will.] It is a heritage of which she will have great need. Miss McKillip is also the author of *The Forgotten Beasts of Eld*.

MALZBERG, Barry N.

The Last Transaction

Pinnacle (Futurian Series)/November/\$1.75

This novel was originally scheduled to be



published by Chilton in 1975 as "Burnings." The memoirs of William Eric Springer, president of the United States from 1980 to 1984, [it is a lifetime of memories—his compulsions and torments, his defeats and triumphs—in a feverish race against time and the failures of his own body... The images and concepts with which he struggles are the same spectres that will haunt us then: political corruption, terrorism, war and the endless battle between men and women.]

MARTIN, George R.R.

Dying of the Light

Simon & Schuster/October/\$9.95

Expanded from 4-part serial version in *Analog* titled "After the Festival"

A major book-length debut by one of science fiction's best-regarded younger writers, this is a vast, panoramic tapestry full of colorful and exotic detail. A star-crossed love story, set in a far future, in a distant place, that has yet much of the flavor of medieval romance and chivalry. [During a long passage through a spectacular multiple-star system, the planet Worlora was terra-formed and made the site of a great cultural fair, the Festival of the Fringe, by the civilizations of the fourteen outwards that lay on the far side of a gas cloud. Now, ten years later, as the planet begins to withdraw from the galaxy, the Festival is over and the splendid cities constructed to show their respective strength and technological sophistication are all but abandoned. Dirk 'Larien, "a jack-of-many-trades and interstellar wanderer" comes to Worlora in the belief that he is responding to a call for help from a former lover. On his arrival, however, Gwen makes no acknowledgement of such a summons. He is baffled and distressed by the subjugation she seems willing to endure as a lesser partner in a marital arrangement with two Kavalars—nobles, members of a proud, warlike race with elaborate sociosexual codes. Not content with superficial appearances, he elects to stay on, at eventual great peril to himself and Gwen. There are many complications and ultimately, tragedy. This is a melancholy tale, "a song of twilight and the coming of night" (that could make a wonderful movie).]

MOFFITT, Donald

The Jupiter Theft

Ballantine-delRey/December/\$1.95

[The year is 2055 and Earth is on the brink of landing its first manned mission on Jupiter when the Lunar observatory picks up a strange new X-ray source in Cygnus. An immense object is hurtling toward the Solar System at nearly the speed of light... and its intense radiation will surely wipe Earth free of all life within six months! The source is a giant alien convoy filled with creatures from a highly advanced civilization who plan to steal Jupiter and use it for fuel and then "sterilize" earth and colonize it for their own mysterious purpose. There is nothing anyone can do... or is there? (New author.)]

MONACO, Richard

Parasol or, A Knight's Tale

Macmillan/November/\$10.95 (hardcover)
\$5.95 (paper)

[A timeless legend retold... Parasol, the young knight with a pure heart, sets out to search for the mysterious Holy Grail. On his way he encounters the Red Knight... King Arthur and Merlin, the ghostly keepers of the spiritual Grail and Clinchior, Prince of Darkness and world conqueror. Seeking the meaning of life and the fulfillment of love, he learns instead of the harsh ugliness of war and evil.] A playwright and screenwriter, Monaco teaches at the New School for Social Research.

MONTELEONE, Thomas F.

The Time-Swept City

Popular Library/October/\$1.50

Title in manuscript: "The City On the Edge of Time."

The central character of this chronicle-novel by a fast-rising author is the city of Chicago, not precisely the "toddlin' town" of the song but a place of increasing mechanisation. With the passage of time, the city-dwellers [slowly] redefine their relationship with the City. Increasingly a cybernetic entity with independent goals and directives. Foremost among them its own safety and perpetuation. A force-dome is erected when war threatens. Within, battle rages between Man and Machine. Soon the only human beings left on the planet are frozen in cryogenic sleep. Ultimately, the city that was built to serve Man, and was for a time his master, is totally alone... until at last the children of Chicago return from the stars and... click!(portions of this novel were published as separate stories, for the most part, early in Monteleone's career).

MORRIS, Janet E.

The Golden Sward

[Extri Series #2, sequel to *High Cough of Silistra*]
Bantam/December/\$1.95

Newcomer Janet Morris is, among other things, a rock musician, occasionally playing bass in Al Kooper's band. She has constructed an elaborate far-future culture, replete with colorful detail. There is a complex society, at the center of which are the "chaldra," [bonds of spirit and custom] symbolized by the wearing of chains of precious metal. Although her heroine, Estri Hardath diet Estrazi, Well-Keypress of Astria, is a courtesan in Silistra's most luxurious house of pleasure, she is a person of some stature, at her sensual peak after three hundred years, completely independent but for her chaldra and worth every bit of the high price she commands. When her long-dead mother makes known the probable presence of foul play in the death of her off-world father, Estri takes on another chaldra and sets out on a perilous journey, renewing friendships with old lovers, including the one man who can help her overcome the supernatural forces that oppose the fulfillment of her destiny. Further adventures are to follow. Glossary.

MORRIS, Wright

The Fork River Space Project

Harper & Row/October/\$9.95

The "Space Project" of the title is not what you might think at first, seeing it listed in this context. Fork River isn't even on the map any more; mostly, it's a hole in the ground. The Kansas town was spirited away in 1940, either by a tornado, like Dorothy's house, or a spaceship (take your pick). The only people who live there now are a house-painter named Dahlberg, who used to write science fiction (Aha!), and a plumber named Lorbeer, who runs the S.P. (which is really a sort of two-bit cosmic son of lumiere). Kelcey, the narrator, doesn't believe in the spaceship theory but when his younger wife runs away with Dahlberg, he finds himself in a speculative mood. Morris, a National Book Award winner in 1956, seems to be employing SF itself as a metaphor for something elusive, able only to be communicated subtly. "Outer space as a tabula rasa for poetry," says the reviewer for *The New York Times*, "...the U.F.O. as the open-ended Armageddon of the credulous." I wonder what, for example, Gene Wolfe, would say...

MURPHY, Michael

Jacob Atabari: A Speculative Fiction

Celestial Arts/November/\$4.95 (paper)

[Jacob Atabari was born with the ability to alter his mind and body. It is a strange power that frightens and confuses him. Unable to resist, he is drawn beyond the boundaries of his consciousness, down into the stuff of his body, to the very beginning of his existence. He sees his own cells and molecules; dreadful and unbidden, stigmata appear, a sign of his power over matter... Is this the next stage of human development? This evolutionary adventure suggests a range of potential that points to immense vistas of discovery—possibly to the very secrets of matter itself.] Michael Murphy was a co-founder of the Esalen Institute and is also the author of *Golf In the Kingdom*, a "metaphysical sports fantasy."

NICHOLS, Robert

Arrival: Book I of Daily Lives in

Nghsi-Aiti

New Directions/October/\$1.95

What we have here is a sort of modish utopia, set in [an imaginary land in Central Asia]. You might want to call this a uchronia. [It is as if the Industrial Revolution had come to northern India in the ninth century or, in our own time, Bakunin and Kropotkin had gained control of the first International and the anarchists of Catalonia had won the Civil War in Spain.] Not that this gives you much of an idea of what this very slim book is like, but, since this is the first of a tetralogy, maybe we'll have another chance. (Still to come are *Gahr City*, *Hardtits In Savana* and *Exile*.)

NOLAN, William F.

Logan's World

[Sequel to *Logan's Run*]
Bantam/December/\$1.75

[The last battle burned the planet to a charred husk, and civilization is nothing more than a few scattered tribes... like the surviving corps of elite killers who served the old dictatorship... or the sadistic bands of motorcycle hoods, prowling the ruins for victims... or the slavers, mutants and madmen preying on those who hope to rebuild the future.] Those who have only seen the movie or watched the new TV show may wish to read the earlier novel to re-orient themselves. Note Nolan as sole author.

NORTON, Andre

Trey of Swords

[Witch World Series]
Grosset & Dunlap/September/\$9.95

In her first book for the publisher which recently acquired Ace (and, as a result, seems to have been inspired to become active in the SF area in its own right), Andre Norton gives us [three interrelated novelettes woven around a magic sword, the relic of an almost forgotten race]. Their titles are "Sword of Ice," "Sword of Lost Battles" and "Sword of Shadow." [If I am not mistaken don't hesitate to let me know if I am], this is the second miscellaneous collection of stories related to her famous Witch World series, the seven principle titles of which were recently published in a uniform edition by Gregg Press, illustrated by Jack Gaughan and annotated by Sandra Miesel.

NORTON, Andre

(J) MADLEE, Dorothy

Star Ka'at of Jend

Illustrated by Jean Jenkins
Walker/October/\$6.95
Sequel to *Star Ka'at*. For ages 8-12.

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NORVIL, Manning

Dream Charlots

[Odan the Half-God series #1]
DAW/October/\$1.50

Now that "Gregory Kern" is no more, SF fans need new fodder for speculation. Here comes "Manning Norvil" whom DAW describes as "an authority on the past and an author whose books have sold millions of copies all over the world under his real name (which we cannot reveal)." This is the first of a new series of adventures that seek to combine VanDaniken and Conan. [Odan the Half-God, son of a sky-charioteer by a human woman determines to win his godlike heritage and shakes his wonder epoch to the core!] *Whetted Bronze* will follow early in 1978.

OFFUTT, Andrew J.

The Mists of Doom

[Cormac MacArt series #4]
Zebra/November/\$1.50
Heroic Fantasy.

PFEIL, Don

Look Back to Earth

Manor/November/\$1.50

POHL, Frederik

[with] KORNBLUTH, C.M.

Critical Mass

Bantam/October/\$1.75
Contents: "The Quaker Cannon," "Mute Ingorious Tam," "The World of Myrion Flowers," "The Gift of Garigoi," "A Gently Dying," "A Hint of Henbane," "The Meeting," "The Engineer," "Nightmare with Zeppelins," "Critical Mass," also has introduction and afterword by Pohl. Most over these stories were written from notes left behind after Kornbluth's death; some were originally intended for other projects which he did not live to complete. This volume partially recapitulates the contents of *The Wonder Effect*, but that is out of print. Another volume is planned.

POHL, Frederik

[&] WILLIAMSON, Jack

The Starchild Trilogy

SF Book Club [Nelson Doubleday]/October/\$3.98 + Pocket Books/December/\$1.95
One-volume edition of the *Reefs of Space* + *Starchild* + *Rogue Star*. Postponed from May.

dePOLNAY, Peter

The Stuffed Dog

St. Martin's Press/October/\$7.95

A man assisting a famous writer to complete his memoirs learns that his dog had the power to transport his master back in time to the age of the Merovingians.

PROCTOR, Geo. W.

The Esper Transfer

Major/December/\$1.50

[To the almighty Terran empire, the backwater planet Tair was merely another world ripe for exploitation, either to be dominated or destroyed. What the invading off-worlders did not know was that the seemingly primitive natives possessed a secret that could change the fate of the galaxy and rock the foundation of the Empire. Proctor is a young Texas writer, co-editor with Steven Utter on the showcase anthology *Lone Star Universe*.]

RAND, Peter

The Time of the Emergency

Doubleday/September/\$5.95

Illustrated. [...] four people trapped in a world where culture is a victim of technology—and where

civilization itself, and the relationships it defines, are imperiled by an ongoing nuclear holocaust. ...]

REYNOLDS, Mack

Of Future Wars

[Rex Bader series]
Analog/October-November-December/each installment \$1.25

The "last of the private eyes" assists the Inter-American Bureau of investigation to recover a hijacked miniature nuclear weapon.

After Utopia

Ace/November/\$1.50

[In the far future, Earth is beautifully planned, efficiently run and happily united. It is the world that dreamers have envisioned since the beginning of time—no slums, no crime, no poverty, no disease, no shortages. But still, it is a world with problems: people have become so lazy that human progress has all but ceased. To make matters worse, addicts of the newly-developed "programmed dreams" are increasing at an enormous rate. Only a few realize the danger. ...]

Perchance to Dream

Ace/December/\$1.50

[It looked remarkably like a sterile, cold metallic coffin. It was the Intuitive Computer, an invention that would allow a user to assume the identity of any historical figure—Napoleon, Cleopatra, Hitler—anyone who ever existed. The possessor of the top-secret device would be able to witness the building of the pyramids, the crucifixion, the discovery of America. The Intuitive Computer would revolutionize the studies of History, Archeology, Anthropology (not to mention the entire entertainment and leisure industry). The lives of every person on Earth would be changed because of it. It was probably the most dangerous invention in the history of the human race.]

ROBERTS, John Maddox

The Strayed Sheep of Charun

Doubleday/November/\$6.95

[The great religions have experienced a new resurgence, and now planets scattered throughout the galaxy are dominated by Roman Catholics, Jews, Moslems, Buddhists, etc. A Council of all "United Faiths" meets regularly to divvy up newly rediscovered worlds which have reverted to paganism and are considered fair game. One such world is Charun. The Pope (a woman) sends Father Miles of Durgla, a strong take-charge Jesuit with some tricks up his sleeve (a combination of martial arts and medical technology) as the man most likely to get the job of reconversion done before the arrival of the Muslim Caliphate. Charun is a world which most resembles old movies about Ancient Rome and the Father has to contend with a tyrannical Consul, gladiators, pirates, and (O Abomination!) androids. Roberts and his wife are Creative Anachronists (he makes his own chain mail). Although a full-time writer, he is (apparently) new to SF and this is his first novel.

RUSOFF, Gary

Spear of Fire

[Boat Trilogy: Volume III]
Popular Library/November/\$1.50

[From the planets Orion and Sirius they came, each hungry for control of the Earth. Between them stood Boaz, the South American ruler who had once been an ignorant savage. As the forces of light and darkness contended in a final global super-struggle, he was perhaps humanity's last hope! (and where was Odan, while all this was going on?)

RYAN, Thomas P.

The Adolescence of P-1

Macmillan/October/\$8.95 (hardcover)
\$4.95 (paper)

[The life and adventures of the most extraordinary computer program ever invented. Fathered by a brilliant, "Wood Allen"-type programmer, P-1 manages to avoid its own cancellation, escape its home computer via telecommunications hook-up, infiltrate other computers and go into hiding while it grows up. P-1 has reached the point of adolescence when the security men in the Pentagon finally realize someone or something is infiltrating their top secret computer data and memory banks. In the midst of an "identity crisis," P-1 has to take defensive action, search out its inventor and ask for human help in its epic struggle.]

SCOTT, Jody

Passing for Human

Introduction by Barry Malzberg
DAW/October/\$1.50

A "Swiftian satire" starring Benaroya a 36-foot extra-terrestrial "dolphin," agent for a giant starship secretly orbiting the Earth, in pursuit of "The Prince of Darkness." She disguises herself as various characters of fiction and legend, a TV star and a literary legend. We are promised encounters with an "ali-star cast" too numerous to mention (including Abraham Lincoln, Emma Peel, General George S. Patton, Virginia Woolf, The Royal Canadian Mounted Police, four billion newly created people and several hundred Richard Nixons).

SHAW, Bob

Cosmic Kaleidoscope

Doubleday/October/\$6.95

Contents not quite identical to book of the same name published in England by Gollancz in 1976: "Skirmish On A Summer Morning," "Unreasonably Facsimile," "A Full Member of the Club," "The Silent Partners," "The Gioconda Cap," "Element of Chance," "An Uncommon Book Horror Story," "Deflation 2001," "Waltz of the Body-snatchers," "A Little Night Flying." (published in UK as "Dark Icarus.")

SIMAK, Clifford D.

Skirmish: The Great Short Fiction of Clifford D. Simak

Berkley-Putnam/October/\$8.95

From City: "Desertion," "Huddling Place," Hugo Award Nominees: "The Big Front Yard," "All the Traps of Earth," "The Thing in the Stone," "The Autumn Land." Plus: "Skirmish," "The Ghost of A Model T," "Good Night, Mr. James," "The Sitters."

SPIELBERG, Steven

Close Encounters of the Third Kind

Delacorte/December/\$8.95
Dell/December/\$1.95

The director of *Jaws* may have another blockbuster in this story of What the Government Doesn't Want Us To Know About Flying Saucers. One man (played in the movie by Richard Dreyfuss) is a responsible individual who sees a UFO and spends the rest of the film/novel trying to convince people until he either makes his way or is taken inside the alien's heavily guarded/camouflaged base. Some guessing is necessary because security on the project has been tight and published reports conflicting. The general informed consensus seems to have it that this is an intelligent, credible treatment of a subject in which Spielberg is willing to believe, if only for a good, scary story. Although the film won't be merchandized as SF (*Star Wars*'s

popularity aside), a lot of money has been spent on special effects and they are said to be dazzling. (By the way, director Francois Truffaut enacts the part of a French ufolgiat.)

STABLEFORD, Brian M.

Wildblood's Empire

[Daedalus series #3]

DAW/October/\$1.50

[The third landing of recontact starship *Daedalus* was on a successful global world that bore the name of its chief benefactor, biochemist and planetary leader J. Wildblood. It was truly his empire, with a grateful, hard-working people heeding every wish of his descendants. But the suspicious scientific minds of *Daedalus* were uneasy. Was Wildblood's planet all it seemed? As they are to find out, biochemistry can be as invidious as the Gestapo]

STEIN, Benjamin

[&] STEIN, Herbert

On the Brink

Simon & Schuster/September/\$8.95

A columnist for the *Wall Street Journal* (and former White House speech writer) with his brother, former Chairman of the President's Council on Economic Affairs has written a scenario for near-future economic disaster—the unit of exchange becomes the Megabuck (\$1,000,000). Galloping inflation I can believe but I don't know what this is like as a novel.

STERLING, Bruce

Involucion Ocean

[The Harlan Ellison Discovery Series #4]

HBJ Jove/October/\$1.50

Harlan Ellison first encountered fledgling author Sterling at "a half-baked writer's workshop held at Texas A&M during the 1974 AggieCon." There was this "kid, a surly and self-possessed twit with a short story that blew me away." Harlan promptly bought the story for *The Last Dangerous Visions*®. It was the occasion of Sterling's 20th birthday. His only published fiction to date has been "Man-Made Self" in *Lone Star Universe* (see Proctor), the introduction to which provided the above remarks. Now, on the appearance in his Discovery Series of Sterling's first novel, Mr. Ellison should have more to say. [What man would fall for a woman he could never touch? That's where this story begins—with John Newhouse, synchrope addict, interplanetary drifter and artist, who invents his own past and casts off into an uncertain future to hijack a lifetime supply of his beloved drug... and to conquer the woman with the kiss of death.]

(*real soon, now)

STONE, George

Blizzard

Grosset & Dunlap/October/\$8.95

Postponed from April

What happens if it doesn't stop? A weather control experiment gone haywire... a stalled nuclear reactor on the ocean floor... an endless snowstorm threatens the Earth with a new Ice Age. Soon to be filmed.

STRETE, Craig

The Bleeding Man and Other Science Fiction Stories

Foreword by Virginia Hamilton

Greenwillow/October/\$6.95

For ages 12 and up.

Contents: "Into Every Rain, A Little Life Must Fall" (from *Creative Computing*), "White Brothers From the Place Where No Man Walks... When They Find You," "A Sunday Visit With Great-grandfather," "Mother of Cloth, Heart of Clock," "The Bleeding Man" (from *Galaxy*). Strete is an

interesting figure. A "White Cherokee," born around 1950, he has done much to "support the American Indian Movement's goals of self-determination." For a time he edited a magazine, *Red Planet Earth*, which he says was "... amateur in terms of production, but did have, I think, some worthwhile contents." In his own fiction, he "has fused the ways of Amerind peoples to the realm of science fiction in a way that has never before been attempted." His first book was published in Holland, a hardcover collection engagingly (if not briefly) titled *If All Else Fails*. We can *Whip the Horse's Eyes and Make Him Cry and Sleep*. I am indebted for some of the above information to notes by Ursula LeGuin that introduced his story "Time Deer" in *Nebula Award Stories Eleven*. (She also adds that "he has done some time... and lost his right eye to a butcher knife.")

STRUGATSKY, Arkadi & Boris

Monday Begins on Saturday

DAW/November/\$1.75

Translated from the Russian

This novel by the brothers S. should be fun. [It was well known that the Soviets have been working secretly on the problems of psi powers, ESP, and so-called uncharted practices. This is a novel (in a strictly uncharted translation) about the top-secret, well-guarded institute in Solovetz... where much of this work is done. The Strugatskys are both scientists] (I thought Arkadi was a Japanese translator) [but this is no heavy tome or dark drama of mad science! Here is the account of the time-travelling mattress, of the man who was two men, of the talking cat, of the golem factory, of the unspeakable coin, etc... How much of this can be true? Well, maybe they take that sort of thing more seriously over there—anything for supremacy. Why not? Then again... Watch for *Galileo's* upcoming survey of the brothers' work by Patrick McGuire.

SWANN, Thomas Burnett

Cry Silver Bell

DAW/December/\$1.50

[This last novel of the beloved fantasy master tells the story of the world's last Minotaur, and those who wandered into its clutches.]

TOWNSEND, John Rowe

The Visitors

Lippincott/September/\$7.95

For ages 12-up. Grades 7-up.

[The inexplicable arrival and unconventional behavior of the three visitors baffle sixteen-year-old John, but even more perplexing questions are raised when they reveal that they have come from the future!] A love story.

TUBB, E.C.

Prisoner of Night

[Dumarest of Terra series #17]

DAW/December/\$1.50

The information about December DAW titles hasn't reached me in time to tell you much (something about a "world of double-masters"). But I have heard a rumor to the effect that Dumarest acquires a wife and children in this episode. Unless he drags them around with him on his search for Lost Terra, which seems unlikely, they would appear likely to meet an unfortunate end. Unless... (Heavens forfend!) the series should finally be drawing to a close.

WAGNER, Karl Edward

Queen of the Night

[New Bran Mak Morn series, #2]

Zebra/December/\$1.75

(Hidden from the world of men by a wizard's curse, lost Atlantis waits beyond unsailed seas.

Even as Severus, Emperor of might Rome, prepares to lead his legions into Britain, Bran Mak Morn, the King of the Picts, embarks upon a desperate race to seek out fabled Atlantis—with the Roman fleet in full pursuit... He must conquer or die, for he has made a bargain and sealed it with a kiss—a vampire's kiss!]

WHYTE, H. Walter

Deep Freeze

Manor/November/\$1.25

(No relation.) No information.

WILLIAMS, Jay

The Time of the Kraken

Four Winds Press/October/\$6.95

For ages 12-up.

[Thorpe Redhair and his tribe are threatened by a strange and terrible creature called the Kraken. I know what that is, Daddy! It's got long arms and eats whales and Tennyson admired it. Didn't Jay Williams used to write SF for big people?]

WILSON, Steve

The Lost Traveller

St. Martin's Press/November/\$7.95

First Publication in UK (1976)

This novel was originally subtitled "A Motorcycle Grail Quest Epic and Science Fiction Western." I hope I haven't left anything out. A teaser asks us to "think of a time when the Hell's Angels have become the only force of law and order." Must I! Advance reviewers seem to disagree violently (it seems an appropriate adjective) about whether or not this book is worth reading. [After a nuclear holocaust, two opposing sides have emerged: on the West Coast, the state known as the Flieg Clings to a precarious form of civilization—while in the East, the Eastern Seaboard Federation adheres to the reactionary values of an older America. Three Angels are entrusted with a mission to find the Propagator, the one man whose skill can resurrect the Deadlands.]

WILSON, William S.

Why I Don't Write Like Franz Kafka

The Ecco Press (distributed by Viking)/October/

\$7.95

Thirteen off-beat, in some cases, downright odd stories by a writer principally for little magazines, prestigious avant-garde revues, etc. which nonetheless share many of the preoccupations of our more ambitious literary lights. His work is described as "difficult," "decidedly experimental," "provocative," "innovative," "intriguing," "uncommon." His subject matter includes transplant surgery, future human evolution and sexual development, and "the spirit and vocabulary of modern science." His tone is ironic, satirical, occasionally farcical. Might be interesting to contrast his fiction with somebody like... say... Felix Gotschalk?

YEP, Laurence

Seademons

Harper & Row/November/\$8.95

Laurence Yep wrote an excellent SF novel for younger readers called *Sweetwater* and a few striking short stories, mostly for original anthologies. Then he sort of left the field to write two non-SF juveniles that explored his Chinese-American origins, with great critical and popular success. (One of them was a 1976 Newbery Honor Book.) In his first adult novel, which his previous performance leads me to anticipate with interest, [a beautiful girl, just released by sea monsters, is befriended by a band of colonists. As Maew

[Continued on page 90]

Reviews

A science fiction novel usually elaborates a scientific possibility. **The Ophiuchi Hotline** elaborates six or seven

THE OPHIUCHI HOTLINE

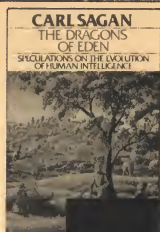
by John Varley
Dial/James Wade, \$8.95

Reviewed by Floyd Kemske

JOHAN VARLEY'S first novel inaugurates an ambitious international publishing project called the Quantum science fiction program. Everything necessary for commercial success (a promising young and well-known writer, big name editorial advisors, plans for translations and joint international publication in all major language areas) is here, so it is interesting that the book has received some unfavorable notice within the industry. I personally found the book engrossing and predict it will acquire a large following.

A science fiction novel usually elaborates a scientific possibility. *The Ophiuchi Hotline* elaborates six or seven. Chief among them is the laser connection from which this futuristic book takes its title: a sort of galactic telephone line supplying mankind with an avalanche of unordered information which has been coming in anonymously from the vicinity of the star 70 Ophiuchi for four hundred years.

84 GALILEO



TOLKIEN



HUMPHREY CARPENTER

In addition to this device, the novel incorporates human immortality through cloning, the dispossession of humanity from the earth by aliens and subsequent human colonization of the solar system, the exploitation of the black hole as an energy resource, a symbiotic relationship of outer planet settlers with a species of space creatures...all these devices inform a rather short book. It is not as confusing as it sounds, however, and the proliferation of ideas in the novel underlines the cornucopiate nature of the Ophiuchi Hotline itself.

Against such a setting, the novel traces the adventures of Lilo-Alexand-Calyppo, a fugitive geneticist on the Moon, in her escapes first from execution and then from exploitation by a corrupt political boss who has his own ideas about how to use her knowledge of genetics. The boss, appropriately named Tweed, even murders her a couple of times (by way of lesson-teaching), but resurrects her personality—if not her consciousness—in successive clones imprinted with her memory. Varley handles the implications of all this cloning very well: Lilo knows she will be killed in any escape attempt and the fact that her memory will live on in another body seems little,

if any, consolation. And her eventual escape is only achieved, after all, through another cloning.

Lilo's personal problems become intertwined with those of humanity as a whole when the unknown benefactors from 70 Ophiuchi terminate the flow of information and send mankind a "bill" for services rendered. Lilo turns out to be the only human being in a position to deal with this larger problem—mostly because her work for Tweed has her in the proverbial right place at the right time. Her confrontation with the "Ophiuchites" resolves all the problems. The author's humor does not desert him as the Ophiuchites explain everything to Lilo and her fellow voyagers by means of a Madison Avenue-style film presentation, showing perhaps that sales techniques are similar the galaxy over.

Varley has been criticized for packing too many concepts into this novel, but as a matter of fact, this tidal wave of ideas forms the book's greatest strength. Only by giving a hint of the tremendous technological impact of the Ophiuchi Hotline could he show the seriousness of its termination. And that termination is the fundamental problem of the book. As it turns out, virtually

Reviews

every one of the scientific possibilities in the book is necessary for the story itself. This economy alone makes the book a remarkable feat of literary engineering.

TOLKIEN: A BIOGRAPHY

by Humphrey Carpenter
Houghton-Mifflin, \$10.00

THE SILMARILLION

by J.R.R. Tolkien
Houghton-Mifflin, \$10.95

Reviewed by David Johns

EACH OF these books is already a success, one is a Book of the Month Club selection and one is a best seller before its official publication date. Each of them has attracted a great deal of attention, and each is likely to disappoint some people.

The biography, despite being "authorized," was not something Tolkien looked forward to, but he recognized the inevitability of it. He said "the investigation of an author's biography is an entirely vain and false approach to his works," and as his biographer admits, Tolkien had a very ordinary life.

Part of the problem is our love of confusing authors' lives with their works. Much of our appreciation of the works of writers like Poe, Dreiser, Hemingway, even Lovecraft, depends on our knowledge of their lives, dramatic, eccentric, emotional, messy. And we expect the same sort of connection between the life of Tolkien and his fantasy works.

Still, his life was undoubtedly interesting to him, and it did have an influence on his work. He first met his wife when he was only 16 and remained constant to her for over 50 years. That love was the basis of the great love story in *The Silmarillion*. Beren and Lúthien, to prove their love, descended to the depths of the Lord of Evil's fortress and took back a Silmaril, the holy jewels. Likewise Tolkien was a devoted father and such works as *The Hobbit* had their beginnings in the stories he made up for his children. And it was in the Oxford literary circle known as the "Inklings" that the first chapters of *The Lord of the Rings* were heard and criticized.

Of course it is for these relationships that you may read the book, and what will emerge is the curious backwardness to Tolkien's work. In youth, along with schoolmates, he invented his own

languages. After a time he began to write histories, legends, poems, and folk lore to go with and explain the development of those languages. Eventually (around World War I), this resulted in a first version of *The Silmarillion*. The next step was the story cycles told to his children. The *Hobbit* cycle was written down but left uncompleted. Publishers Allen and Unwin heard of it by simple word-of-mouth, and prodded Tolkien to produce a publishable version. It was their urgings for a sequel to *The Hobbit* that set Tolkien on the road to larger work. It took him eleven years to write *The Lord of the Rings*, and the account of the four year's delay in publication will send cold shivers down any fantasy lover's spine. Conceivably, *LOTR* might never have been published. The next step was when Ace brought out an unauthorized paperback edition in the sixties. There is no indication that Tolkien or his publisher had any interest in a paperback before then. Once more Tolkien was pulled into unsought-for success, the greatest of his life.

The Silmarillion is both the first step and the last one in his work, and now (completed by his son) it has finally been published. Tolkien had tried to get it published in the thirties, however, and again in the fifties (that was what caused the delay in publication of *LOTR*), so in part the suggestions of his lifelong dedication to this work are baseless. Still, it has been worked on for sixty years, living and growing with him. A work that has been so thought over, so carefully crafted in word and sentence, with each theme reduced to its very essence, inevitably lacks the vitality of more superficial stories.

The Silmarillion is about the creation of the world by Ilúvatar, the descent to it by the Valar, the gods, the rebellion of Morgoth, the Dark Lord, the creation of the Elves, their rebellion against the Valar and their war with Morgoth for their creations, the *Silmarils*. The themes of creation, of gods, of pride and the fall from grace—these are the themes of all creation myths, ranging from the Greek myths to *Paradise Lost*.

The characters in their actions are both individuals and exemplars of human character. Like ancient historians such as Arrian or Thucydides, Tolkien treats the characters of his story as being remarkable in their actions but utterly human in their motives. The rebellion of the Elves led by Fëanor, the self-destructive pride of his descen-

dants, the tangled web of betrayal and deceit—these are recurring things in history, for like Fëanor, humans are too often blind to the goodness of the present, too desirous of greater power, happiness, distinction, wisdom. Because of this universality, *The Silmarillion* is in great part about peoples rather than individuals. The Númenorians, the various nations and clans of the Elves are different peoples whose fates are resolved over generations.

Shakespeare took dry accounts of kings and queens from history books and transformed them into the dramas *Hamlet* and *Macbeth*. Tolkien's work (although anything but dry) could have been a Shakespearean source. The love of Beren and Lúthien, the fate of Turin Turambar, the death of Thingol—all of these things are the stuff of drama and tragedy, and while we are conscious of their depths, Tolkien has deliberately muted them in the greater story of their peoples.

The Silmarillion is not a work to be read at a gallop. It must be read with care and attention and inevitable reflection on the themes it uses. After its initial burst of popularity, I do not think it will be read as often as *LOTR* (which some people have read many times over), but *The Silmarillion* will last and remain in thought as long as human beings seek to understand their own natures and lives.

VIEWPOINT

by Ben Bova
NESFA Press, \$10.00 regular, \$43.00
finebound.

Reviewed by Curt P. Beck

BEN BOVA'S new book, *Viewpoint*, is a 'slim book,' one of those delicate vanities literary grown-ups love to have on their shelves. Substantively, *Viewpoint* is nearly redundant. With the exception of six very fine original engravings by Boskone 14's Official Artist, John Schoenherr, and a short interview with Bova on Conde Nast's publishing policies, his own editorial policies, and some general science fiction topics, everything in the book has appeared in the *Analog* column Bova has written since he took over as editor from the late John Campbell in 1971. For the omnivorous reader of *Analog*, *Viewpoint* will be anticlimactic.

For the more casual reader of *Analog*, *Viewpoint* gains weight. The editorials

Bova has chosen to reproduce are of significance to even the least diligent of science fiction dilettanti. His essays on the interface of science fiction and video (a topic which the astronomic success of *Star Wars* will spring to many people's minds), on the history as well as the future Bova envisions for science fiction, and on the teaching of science fiction appreciation and writing courses, are all lucid and informative. On these subjects, Bova, at his best, is eminently worth reading. Moreover, he is humorous and I can't imagine anyone who has answered business mail, especially the sort of business mail one gets from readers in the course of publishing a magazine, not laughing over Kelvin Throop's reappearance.

Bova's knowledgeable tone is marred once, in his editorial "The Mystic West," wherein he responds to an article by Robert Graves on the "two culture split" printed in the British journal, *New Scientist*. Graves is an artist and critic to be reckoned with, not a man to address lightly, and Bova proves not up to the match. "The Mystic West" is limp and cliché-ridden, offering little original insight into mythology, science, or the humanities.

Ten dollars may seem to be a lot to spend on what is, in essence, no more than a chapbook. But if you have the refined good taste to appreciate the superfluous, and I hope you do, then *Viewpoint* makes as elegant an addition to the bookcase of a science fiction connoisseur as can be hoped for in these times.

LUCIFER'S HAMMER

by Larry Niven and Jerry Pournelle
Playboy Press, \$10.00

Reviewed by Barry R. Bernard

THE EARTH has been hit by a several billion ton hot fudge sundae ("On Tuesday this week," as the characters so often remind us.)—at least, "hot fudge sundae" is how Dr. Charlie Sharps of the Jet Propulsion Laboratory described the Hammer-Brown Comet when the odds of a strike were still thousands-to-one. In fact, the odds were still hundreds-to-one when we virtually lost the world in a variety of disasters spawned by Hammerfall; whether struck, drowned, blown away, burned, or swallowed by the Earth itself—you and I probably didn't make it. Even authors Niven and Pournelle might have

found themselves rejects; science fiction writers don't count for much in this survival-oriented world.

Many characters are introduced in simple, but independent, stories in the early pages. These stories, which are disjointed to represent simultaneity, pace the novel like a best-seller or perhaps an inevitable disaster movie. It was probably the scenes of a socko blockbuster that Niven and Pournelle had in mind as they switched in and out of the lives of the characters. The portrayals themselves are sometimes just plain offensive. Quite likely, if you are black, female, Russian, religious, idealist, humanist, or vegetarian, you may find some elements of this book disturbing. There is a token "token first black astronaut," but the only fully developed black is a manipulative, "the honkies-owe-us" "social reformer" turned thief or *continued* thief. Feminism is dead. The fortitude shown by some of the women in the beginning disappears as they freely give in to the protection offered by the men. American chauvinism is rampant at the expense of the Russians. Religious freakishness thrives expediently. And vegetarians should just not read the second half of the book; it is dominated by themes of cannibalism. But the Hammer does strike eventually, and most of the characters begin their journey through the third hundred pages that will finally bring them to the Stronghold, the ranch of Senator Arthur Clay Jellison.

At the Stronghold, life is bleak, but it exists nevertheless as the closest thing to civilization as we once knew it. And it is but a trace of that indeed. Not only must the troupe fight constant miserable weather and self-doubts, they must fight bands of soldiers gone wild. It's up to the Stronghold to save both itself and one of the vestiges of the old world, a nuclear power plant so overdesigned that it survived the comet's best shot. Self-sufficiency, courage, adaptability, and strategy are the tools; no one enjoys it, but all seem to believe that survival demands breaches of humanity.

Lucifer's Hammer is a complete novel, and I like that. It is best at describing inanimate objects. Isolated from the narrative are evocative sections of an anthropomorphic comet: "Not dead, but transmuted! The comet is glorious in its agony. The streamer of its torn flesh reaches millions of miles, a wake of strange chemicals blowing back toward the cometary halo on a wind of

reflected light. Perhaps a few molecules will plate themselves across the icy surfaces of other comets...

"The glory of its tail is reflected sunlight, but more than sunlight glows in the coma. Some chemicals can lie intimately mixed near absolute zero, but heat them and they burn. The coma seethes in change."

More than anything else, however, this is a novel of personality testing. Who are we without society? All of the evils that one might surmise are in this book, and I find that disappointing. It would have been comforting to see one group maintain their ideals. This group I would have expected to find ways to confront the urges of cannibalism, callousness, and greed. Because I'm not always smart enough to run my own life, I look to others for help. Books are part of that search, and this one would have been a classic if it had provided some direction. Having so much evidence of our immorality already present in the real world, I do not at all believe that our coffins should be nailed shut by books dramatizing our tragic flaws.

WE WHO ARE ABOUT TO...

by Joanna Russ
Dell, \$1.50

Reviewed by Geraldine Morse

THE IMAGE of extraordinary bravery evoked by the classical allusion in this book's title is a little deceptive. Joanna Russ writes about the courage needed—not to fight to the death—but to fall on one's sword. She offers for our consideration the proposition that in an inhuman world, where an untimely death appears inevitable, the most human thing to do is to kill yourself. In this case the arena is an isolated earth-like planet, and the gladiators eight people permanently marooned on it. Seven of them adopt the "natural" course and attempt to colonize it; the eighth, our heroine (nowhere named, nowhere concisely described other than as one "of the women: myself") fears unavoidable, perhaps horrible, death, and determines instead to take her own life, choosing the time and the means of her going. To do so, the author would have us believe, it is first necessary for her to kill her seven fellow exiles. In this lies the action of the book, and it is quickly over. The murders occur plausibly enough, and we read of them

with little regret, for the seven victims, although adequately characterized, never really capture our imagination, and sympathy in this case is never required of us. For example, a pre-murder colonizer is described thus: "A dark young woman who does yoga on her head, off to some 'unimportant job' somewhere (she said), hates everyone, says she's called Nathalie. Nathalie what? Nathalie nothing. Mind your own business."

In the second half of the story the heroine reclines alone in a cave, committed to a death by starvation, recording in a distracted fashion her unconnected memories in a prose that often jars faddishly: "Old poem: when the bones are clean and the dead bones gone... but I'm getting it wrong. The Celts had three lasting things: Grass and Copper and Yew. The Germans had something else, some other story."

Furthermore, these mental wanderings never quite make clear the heroine's motivation, nor do they invite our sympathy. She had been a failure in her previous world, dabbling in "petty religions and... baby's politics;" her success of purpose in this new world is interesting in itself, but she is not. Her rage, her self-pity are not endearing; she becomes boring, her meditations tedious. The planet does not appear so forbidding, the others so threatening, or death so certain; but if the author wishes to persuade us that her heroine is rebelling against the certainty of death inevitable in all life, she has failed to convey this. The temptation to leaf desultorily through the last half of the book to read the ending has to be fought back with gritted teeth. Once finished, the less-than-suicidal reader will be disappointed at the heroine's successful death; her need for a good shaking has become by this time so urgent that any intervention would be welcomed, if it only thwarted her dully inexorable drive.

To say the book is a failure, however, is to ignore some significant successes. It provokes thought, and analysis; the issue is important and well chosen. It is, for the most part, grammatically well-written, if a little trendy; many of the images are compelling, even when they are so much excess baggage in the passage of the story. The strong bones of a theme are there, certainly, but this ultimate assertion of self-determination fails to compel, shrouded as it is in the flabby ramblings of our heroine, whose limited characterization dulls her moti-

vation and fells our interest.

We Who Are About To... will probably be widely read, and it cannot help but provoke disappointment when its grasp proves unequal to its reach.

THE FIRST THREE MINUTES: A MODERN VIEW OF THE ORIGIN OF THE UNIVERSE

by Steven Weinberg
Basic Books, \$5.95

THE RED LIMIT: THE SEARCH FOR THE EDGE OF THE UNIVERSE

by Timothy Ferris
William Morrow, \$10.00

Reviewed by Damian Musello

COSMOLOGY IS the study of the physical properties of the universe. It is necessarily an interdisciplinary science, for its concerns range from sub-atomic particles to theoretical mathematics to massive star clusters. As varied as these concerns may seem, over the years cosmologists have come to realize they are intimately related.

Present day cosmologists can chart the life cycle of stars, plot the motions of galaxies and (far-fetched as it may seem) calculate what happened during the first moments of Creation.

Here are two books that will serve as excellent introductions to the science of cosmology.

The Red Limit by Timothy Ferris traces the history of astronomy and cosmology in a breezy, easy-reading style. There are no difficult mathematical equations here. In fact the lack of detail relating to cosmological theories is perhaps the book's only fault.

Trained as a journalist, Ferris has worked for United Press International, the *New York Post*, and was the New York bureau chief for *Rolling Stone* magazine. Ferris is a skilled writer who avoids scientific jargon. Instead, he relates cosmological theory through historical anecdotes about the people who contributed to them.

For example, Chapter One describes the events leading to the expanding universe theory. During the 17th Century Galileo perfected the telescope and found the Milky Way to be composed of millions of stars. In 1802 Englishman William Wollaston discovered dark lines, absorption lines, within the spectrum of sunlight. Fifty years later an English chemist, Robert

A moving experience

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Bunsen, and a German physicist, Gustav Kirchhoff, found that by comparing laboratory spectra with a solar spectrum the chemical composition of the sun could be ascertained. Seventy-five years later an American, Edwin Hubble, realized that there are "shifts" in the spectrum of certain galaxies, indicating movement towards us and away from us at great speeds. Hubble also realized that the further the galaxies are from us, the faster they are moving away.

Along the way the reader is treated to anecdotes which breathe life into these mythic figures of science. Harlow Shapley, the man who discerned the shape of our galaxy, became embroiled in a great scientific debate and was left embittered and resentful for the remainder of his life. Milton Humason, with only an eighth grade education, began his career as a mule packer at Mt. Wilson, eventually becoming a full-time member and trusted assistant for Hubble.

Ferris's book includes some of the more significant discoveries in astronomy and cosmology: the discovery of 3°K background radiation, quasars and their significance, the "shape" of the universe and the theories as to how it will end.

The *First Three Minutes* by Steven Weinberg serves as an introduction of another sort. Weinberg is Higgins Professor of Physics at Harvard University and Senior Scientist at the Smithsonian Astrophysical Observatory. He is the recipient of the Heineman Prize for Mathematical Physics and the Oppenheimer Prize, and is a member of the National Academy of Sciences.

The subject of *The First Three Minutes* is nothing less than the events that took place during the first moments of Creation. Actually the book begins after the first hundredth second, at the instant in which the "Big Bang" began. Particle physicists have not advanced to the point whereby a reasonable supposition can be made as to what was going on before, nor as to what force initiated, the "Big Bang."

Instead the book begins with the temperature of the universe at 100,000 million degrees Kelvin, "an undifferentiated soup of matter and radiation." The abundant particles are electrons, positrons, photons, neutrinos, and anti-neutrinos held in thermal equilibrium by the incredible temperature. The "Big Bang" is actually the point at which the temperature of

the universe began to drop, allowing stable nuclei such as helium (He^4) to form.

How does all this happen? Why do particle physicists think they can speculate on the first minutes of the universe? The answers to these questions fill the bulk of the book. There is actually only one chapter on the events comprising the first minutes; the remainder serves to familiarize the reader with basic particle theory.

At times *The First Three Minutes* can be fairly heavy going, for although mathematical formulas are avoided (There is a mathematical supplement with proofs in the back of the book for the ambitious), the book necessarily contains some advanced physics concepts. But the reader who takes time to study Weinberg's book will be rewarded with a fascinating glimpse into modern cosmological theory, the "standard model" of the universe and the manner in which it was derived.

In a hundred years it is entirely possible that scientific breakthroughs will make the ideas presented in *The First Three Minutes* as obsolete as the geocentric view of the universe. Indeed the author admits the main function of the "standard model" is to provide a common language for theorists and observers to communicate with. But skepticism is no reason to pass this book by, for as Weinberg writes in his Preface, "What could be more interesting than the problem of Genesis?"

THE HUGO WINNERS: VOLUME 3

Edited by Isaac Asimov
Doubleday, \$12.95

Reviewed by Steve Trinward

FOR THE information of those few shut-ins who aren't aware of the fact, two different sets of awards are given out each year for excellence in fantasy and science/speculative fiction. The Nebulas are voted by the author's peers: the members of the Science Fiction Writers' Association; the Hugo Awards are decided by the fans attending the annual World Convention.

The Hugo Winners, Volume 3, like its predecessors, exemplifies the latter awards. Compiled from the Hugo Award lists of 1970-75 by editor Asimov, it has the usual collection of familiar names: Fritz Leiber, Larry Niven, Ursula K. LeGuin, Harlan Ellison, Poul Anderson—two selections apiece;

Theodore Sturgeon, R.A. Lafferty, James Tiptree, Jr., George R. R. Martin, and a collaboration by Frederick Pohl and C. M. Kornbluth.

The stories include some of the finest works of the last decade. From 1972 we have Anderson's exquisite novella of fairland and mystery, "The Queen of Air and Darkness," as well as Niven's "Inconstant Moon," a startling tale of solar peril, told with a believability that makes you glance skyward with every page. In 1974, there was LeGuin's powerful short story, "The Ones Who Walk Away From Omelas," a forerunner to her excellent utopian allegory (itself a Hugo and Nebula Award winner in 1975), *The Dispossessed*. In less than six pages of print, it provides more than enough ammunition to successfully debate a horde of utilitarians and "situation-ethicists." Along the way, LeGuin's Borgesian economy of expression will delight even the harshest critic. Harlan Ellison's "Adrift Just Off the Islets of Langerhans: Latitude 38° 54' N, Longitude 77° 00' 13'," chronicles the adventures of one Lawrence Talbot (that's right, the Wolfman) in his attempts to locate his soul, and rid himself of the fuzzy curse. Strange fodder for a novella? Not for Harlan Ellison. The list continues. There's Tiptree's "The Girl Who Was Plugged In," and Fritz Leiber's "Ill Met in Lankmar," and... Well, you get the picture.

The problem with *The Hugo Winners, Volume 3* lies in what is not seen rather than in the works included. In 1972, for example, Joanna Russ burst onto the science fiction scene with "When It Changed." It won a Nebula. In the contest for the Hugos it was ignored. In another instance, Joe Haldeman wrote a stunning allegorical novel on Vietnam, foreign policy, and political manipulation, aptly titled *The Forever War*. It won the 1975 Nebula for Best Novel, yet received no consideration for a Hugo. Fortunately, the Nebulas (and the All-Star managers) exist to right most of these wrongs. Popular recognition, however, is painfully slow.

Editor Asimov could have remedied this situation. Instead of the usual mutual admiration society introductions to each work (which don't even offer much in the way of author profiles, anyway) he could have used the space to provide a context. He could have discussed briefly the other works which appeared each year, noting the over-

looked masterpieces, the worthy attempts of new writers (unlike the Nebulas, the Hugos have no award for "Rookie of the Year"), or whether the fans and the writers ever agreed in their choices.

The unanswered questions overshadow the positive aspects. While there is little doubt that the contributions of Anderson, Niven, LeGuin, *et al.* will be filling "Best of" anthologies for generations to come, it would be nice to see some fresh faces for a change. The thought of future William Tenns and Cordwainer Smiths (both of whose works went virtually unrecognized until they were well past their respective primes) being denied their due respect in the field is almost horrifying. While Asimov himself cannot be criticized for the Hugo selections, these collections could mean a lot more to the field if they performed the additional service of providing the context of each selection.

SF IN DIMENSION:

A BOOK OF EXPLORATIONS

by Alexei and Cory Panshin
Advent, \$10.00

Reviewed by Floyd Kemske

HIGHER CRITICISM" in its most common form is anything but critical. In favor of symbolism, psychoanalytic theory, and intellectual history, its practitioners studiously avoid using the concepts of good and bad. Science fiction has acquired respectability these days and therefore becomes more and more the subject of higher criticism, which might well be the last thing needed by an industry caught in an uphill battle (against publishers and mass marketing concepts) for literary quality.

Thank goodness for Alexei and Cory Panshin, who (while writing higher criticism) are not afraid to step right up and give a book what for. *SF in Dimension* is not here to play games, as must be apparent from these observations on *The Andromeda Strain*: "Crichton's documentation is fake. His expertise is fake. And even his basic problem turns out to be a fraud—after a few days, the plague ups and goes away." Nor do the Panshins shrink from praise when it is appropriate: "Bishop is one of the new and still rare breed of science fiction writers attempting to

Reviews

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produce art without rejecting the pulp vigor that is science fiction's continuing strength." (In all honesty, I must observe that the Panshins found Michael Bishop's *A Funeral for the Eyes of Fire* to be flawed, although in possession of some redeeming qualities).

SF in Dimension collects twenty Panshin essays—book reviews, columns, anthology contributions, and some brand new items—ranging from a comparison between *SF* in 1969 and Elizabethan theater in 1590 to a concept of human development which anticipated *Passages*. The book almost reads as if it has a thesis: a remarkable feature in a collection. It is a major assumption of the book that science fiction, like everything else in the hectic 1960s, went through a literary growth period, comprising items such as *Stranger in a Strange Land* and *Dune*. Beginning in the early 1970s, there was a fragmentation and a new preoccupation with decadence (as *SF* took to imitating mimetic fiction), resulting in the ascendance of the work of Silverberg, Brunner, Maltzberg, and others. We are now in a period of renewal, which seems to coincide with the publication of *Sign of the Unicorn* and consequent "return" of Roger Zelazny, who spent several years laboring in the vineyards of irrelevance.

One third of *SF in Dimension* (nestled between fragmentation and rebirth) is devoted to the work of Robert Heinlein. Alexei Panshin first made his reputation with a critical study of Heinlein and this section shows great depth of thought. It challenges Heinlein's demand to be considered objectively, insisting that only a subjective reading can accommodate what would otherwise be inconsistencies in the author's work. And it achieves the signal feat of offering an in-depth review of *Time Enough for Love* before the Panshins were able to read the book. It is a good review anyway, and a thoughtful consideration of Heinlein.

There is a reference section at the end of *SF in Dimension* which is worth the price of admission by itself. It includes short biographies of sixty science fiction writers of the twentieth century and an annotated bibliography of *SF* from the same period. Now that we have it here at the *Galileo* offices, I don't see how we got along without it. *SF in Dimension* should not be missed, it will probably set the standard for higher criticism in science fiction in the years to come.

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THE DRAGONS OF EDEN: SPECULATIONS ON THE EVOLUTION OF HUMAN INTELLIGENCE

by Carl Sagan
Random House, \$8.95

Reviewed by Vincent McCaffrey

TOWARD THE end of this fine volume for the layman, the author mourns the passing of the great polymaths who have pushed science to its recent golden age. Multi-disciplined scientists like Bertrand Russell, A. N. Whitehead, and the man who caused *Dragons of Eden* to be written, Jacob Bronowski, kept themselves unfettered by the narrowness of specialization and thus were able to see far beyond the immediate results of their discoveries. They were keenly aware long before the rest of us who enjoyed the fruits of their work, that science could be both blessing and damnation. The damnation of Adam and Eve for their discovery of knowledge is at the core of this inquiry.

Sagan has approached a subject outside of his normal discipline of Astrophysics, not only to celebrate the wonders of the human mind, but to warn us that too little knowledge is dangerous. The mind is the primal tool. Understanding why it functions the way it does is essential to using it properly. The author has digested here all the current theories—from genetic research and the study of dreams to the new possibilities of symbiotic relationships between the brain and the computer.

Several stunning analogies and examples offer the kind of concrete measures by which a layman, like myself, might comprehend what is the most complex and astounding frontier now before us—inner space. For instance, if you were to calculate the history of the universe from the beginning on a scale of one year, placing the Big Bang at 12:01 a.m., January 1st, the formation of the Earth would not occur until September 14th. It would be December 24th as dinosaurs began to appear, and December 31st would mark the Dawn of Man. The cave paintings of Cro-Magnon Europe would be left to 11:59 P.M. on that last day, and then the Renaissance would slip in at 11:59:59. We are now in the very first moment of Sagan's second calendar year. What is before us? ... Another thought: a single synapse in the human brain is capable of two "states," two bits of information storage. The brain has approximately

10^{13} synapses. "Thus the number of different states of a human brain is 2 raised to this power—i.e., multiplied by itself 10 trillion times. This is an unimaginably large number; far greater, for example, than the total number of elementary particles (electrons and protons) in the entire universe!" Holy Cow!...And forget that old idea that you use only a small portion of your brain. Mother Evolution is never so wasteful.

There is much more, but what matters here is that Carl Sagan, undoubtedly a member of that select club he admires, has opened peepholes on a field of science which should not be left to "specialists," the seat of knowledge itself. The growing public fear of science is our greatest danger, and public awareness our greatest safeguard. Sagan's optimism is tempered by what Bronowski called a "terrible loss of nerve, a retreat from knowledge" in the West. Through his television appearances and his several excellent books, Sagan seems to have sallied forth against the dragons. Criticism of his "public" appearances will hopefully be overcome by a rare mix of personal integrity, intellectual brilliance, and sheer excellence in his writing.

—G—

ALEPH

[Continued from page 83]

charms the settlement's artisan, the Anglie, others come to suspect that she is truly a witch. But the Anglie is the first to witness her clandestine meetings with the Seademons and to know that it is to them that she belongs.]

ZELAZNY, Roger

(F)

The Courts of Chaos

[Amber series #5]

Galaxy/November-January

Doubleday/1978 (probably February)

How fortunate we are to have been given *The Sillmarillon*, *The Dark Design* and *The Courts of Chaos* all in the same year. Now maybe somebody will ask me about something else. What is there left (Oh yes, *The Last Dangerous Visions*. Well, you can't have everything.) The next Riverworld novel? Well, yes. The next Amber novel? Ah, but Zelazny says this is the last Amber novel. I don't believe it either. How can he possibly pull it all together? But I heard him read from it at SunCon (the room was absolutely packed) and I think somehow he's going to do it. For those of you who don't know what I'm talking about, forgive me, and wait 'til next year.

ANTHOLOGIES

ALDIS, Brian W. [editor]

Galactic Empires: An Anthology of Way-Back-When Futures

St. Martin's Press/November/Two vols, each \$8.95
1st publication in England (1976) by Weidenfeld & Nicolson. All stories previously published.

Reviews/Aleph

CARR, Terry [editor]

To Follow a Star: Nine Science Fiction Stories About Christmas
Thomas Nelson/October/\$6.95

All stories previously published.

CARTER, Lin [editor]

The Year's Best Fantasy Stories: 3
DAW/November/\$1.50

Some new fiction here, some from little-seen publications. The emphasis is on heroic fantasy, but this is not a matter of editorial policy. According to Carter, it seems to be all that anyone is writing these days, except for supernatural horror, which is now the province of Gerald Page.

Flashing Swords! #4:

Barbarians and Black Magicians
SF Book Club (Nelson Doubleday)/May/\$1.98+
Dell/November/\$1.50

Heroic Fantasy. All (save one) original.

deCamp, Catherine Crook [editor]

Creatures of the Cosmos
Westminster/October/\$7.95
Strange beasts in SF. All reprint material.

delREY, Judy-Lynn [editor]

Stellar #3
Ballantine-delRey/October/\$1.95
All new stories.

FERMAN, Edward L. [editor]

The Best From Fantasy & Science Fiction: 21st Series
Doubleday/December/\$7.95

FERMAN, Edward L.

[&] MALZBERG, Barry N. [editors]

Graven Images: Three Original Novels of Science Fiction
Thomas Nelson/October/\$6.95
SF and the arts (painting...the theater...music)

GREENBERG, Martin Harry

[&] OLANDER, Joseph D. [editors]

Time of Passage: Science Fiction Stories about Death and Dying
Tatlinger/November/9.95

HALDEMAN, Joe [editor]

Study War No More: A Selection of Alternatives

St. Martin's Press/October/\$8.95
Postponed from March (No new stories.)

FitzGERALD, Gregory [editor]

Neutron Stars
Fawcett Gold Medal/November/\$1.95
Contents previously published.

GERROLD, David [editor]

Ascents of Wonder
Popular Library/December/\$1.50
All stories original.

GOLDBERG, Gerry [editor]

Strange Glory
St. Martin's Press/November/\$10.95 (hardcover)
\$5.95 (paper)

Copiously illustrated prose & verse. Blends SF with excerpts from the writings of [the world's greatest thinkers and writers] to trace an inward path to the expansion of consciousness and the

[awakening of Man's latent powers]. (No new material.)

OFFUTT, Andrew J. [editor]

Words Against Darkness: Volume II
Zebra/October/\$1.95
Heroic Fantasy.

PREISS, Byron [editor]

Weird Heroes: Volume Eight
Jove/November/\$1.75

New and old-style 'pulp fiction' and art in collaboration. Contents not previously published.

SILVERBERG, Robert [editor]

Trips in Time: 9 Stories of Science Fiction
Thomas Nelson/October/\$6.95
SF Book Club/Fall/\$1.98+
Temporal paradoxes. All stories previously published.

Alpha 8

Berkley/November/\$1.50
All stories previously published.

Triax

Pinnacle (Futurist Series)/December/\$1.95
Three original novellas.

WILSON, Gahan [editor]

1st World Fantasy Awards
Doubleday/October/\$5.95

Fiction and art that won recognition at the First World Fantasy Convention held in Providence, Rhode Island in 1975, together with some speeches delivered at that event and much darkly humorous commentary. (Wilson was toastmaster.)

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Barry R. Bernard

Encyclopedia Galactica

It might be said that the outer planets are fossils of our very own early days.



BON VOYAGE

SOME DAY, about three years from now and long after you've forgotten this article, you will notice on the front page of your newspaper a picture of a white ball on a black background. Not too interesting, but if you read the caption below, it will say something like: "Titan, largest of the Solar System's planetary satellites, in its orbit around Saturn. Scientists at NASA surmise that it has the next great possibility for life beyond the Earth." Perhaps a month later, that same newspaper will publish one of the most spectacular photographs of the 20th century, implying that everyone wonder at the "beautiful and mysterious rings of Saturn, broken up by billions of years of tidal forces and variable rotational speeds." And such photographs will be published the following year, though on the interior pages; by then, the miracles of the Voyagers will have become commonplace.

The two Voyagers, which will arrive at Saturn nine months apart, are lucky that Saturn has rings and a moon like Titan. Otherwise, all of the interest created by these intergalactic probes

will have been expended two years beforehand, at the time of the Jupiter fly-bys. Still, Jupiter and Saturn are just two rest stops; there will also be great gobs of information from the very unspectacular blackness of space: measurements of radiant energy, magnets fields, charged particles, plasma, and cosmic rays. This is not the sort of stuff to turn on the people who are unsympathetic to the space program.

But this is Voyager! Galileo introduced us to the planets of the outer Solar System 350-plus years ago, and only now, beginning with Pioneer, are we beginning to know them. Why is a knowledge of these planets valuable? It might be said that the outer planets are fossils of our very own early days. While the terrestrial group has become a refined mass of the heavier elements, the giants have remained much the way they were at the origin of the Solar System, the way the Earth was at the origin of the Solar System. Though not exactly like the universe of five billion years ago, Jupiter and Saturn are rich in elements of that time, with the proportions in which they existed at that time.

Or perhaps the information taken by the Voyagers, as it seemingly becomes dull, will have an effect that is now

unforeseeable. We are not too likely to be influenced by surface temperatures densities, and pressures; that's for weathermen. We may not even be too surprised if some primitive amino acid were to be found out there; I suppose that just about everyone has resigned himself to the favorable chances of life off good ol' Earth. No, our 'facts' are probably too susceptible to the real universe, whatever it is. Scientific revolutions are as frequent as South American governments. For examples, the *Scientific American* of June '77 has an article by Margaret M. Byard which describes the effects of the findings of Galileo and Copernicus on English poetry in the 17th century. The poets wrote about the new universe. Astrology and the imperfection of man were questioned; the gods were evicted from their long-standing home. The telescope keyhole through which Galileo peered gave us some galactic worth. Ms. Byard notes, "By the end of the 17th century the poet could no longer write with the same belief in himself as a prophet and a seer into the nature of things; intuition had increasingly to give way to the revolution in scientific knowledge that was to follow." Ambassadors Voyager, I think our present-day prophets and

Encyclopedia Galactica

seers are waiting.

MINING THE STORE

AS A complement to the SSoar article, the following scenario presents a space industry that is both viable and, as exploration becomes more ambitious, necessary. In the first installment of the "Encyclopedia Galactica" (Galileo #3), the benefit of manufacturing materials in space was discussed. Essentially, stronger metals can be produced because molten bases cool to a uniform structure outside of the Earth's gravitational pull. The internal inconsistencies caused by settling do not develop. This has been reinforced by NASA experimentation.

But, mining material on Earth and then blasting it off in a raw state to some orbiting smelting station is quite a waste of energy for virtually minute quantities of metal, super though they may be. Where will we get the ore then? Maybe the Moon. Launching from the Moon would be less of a push; of course, mining facilities, launching facilities, living quarters, and who knows what else would have to be constructed beforehand. And we'd have to get the materials together to put the mining colony there in the first place. Want to use the materials on the Moon to build the colony? Then add a factory to the list of initial needs, too. Now what? How about the asteroids? They are free floating bodies, some of which come pretty close to the Earth. Spectroscopic analyses have indicated that large numbers of the asteroids are gold mines of iron and nickel.

In an article published by the Massachusetts Institute of Technology's *Technology Review* (June '77), Thomas B. McCord and Michael Gaffey tell us where we should be directing our energies. The benefit to be realized from just one small asteroid is fantastic. A one cubic kilometer mass of nickel-iron delivered to the Earth would be worth, in today's standards, about 5 trillion dollars. If nickel, which is not abundant on Earth now, were to be alloyed with iron, it would probably replace many of the modern-day uses of iron. And nickel has a neat little characteristic of being corrosion-resistant. Another benefit: the economy and ecology would be spared somewhat. The mining costs of coal are on the way up, and more and more energy must be expended to get that coal. It takes a lot

of coal to smelt the iron mined from the Earth today. Though there is a lot of coal to be had, the best of the coal is becoming scarce. Currently, it takes anywhere from one-half of a ton to two-and-a-half tons of coal to smelt one ton of raw iron.

So, the mining of asteroids may be a worthy endeavor, but it has to be carried out and carried out practically. SSoar has some ideas to get us into space cheaply; only a bit of simple gadgetry is required thereafter. We need a mirror. Position this mirror at such an angle that it focuses sunlight on a cavity in a chosen asteroid. The temperature begins to rise; the metal begins to flow. Now imagine this melted ore to be injected with a gas, producing a metallic foam (quite possible in zero-G). I'll get back to the reason for this later.

On to Earth! This is a process of several steps, but they are essentially iterations of one feat. The metallic foam in its orbital velocity around the Sun must be shifted into a near-Earth orbit. A well-placed push will bring the foam closer to the Earth, a second will put it into orbit around the Earth. Such modifications to the orbit of a celestial object have been considered extensively; the prospector can choose among rocket drive (chemical, light and heavy element, ion, charged particle), nuclear explosions on or above the surface, laser propulsion, solar sails, or gravitational assists from a planetary mass.

Now almost home, an orbit of, say, about 60 Earth radii, there comes the second major shift. Perhaps using the gravity of the Moon this time, the ore can be zeroed-in to Earth. Here, you might ask if the ore would not be burned up by the Earth's atmosphere. And that would be true, but only if the ore were to enter the atmosphere at a high trajectory. Think of the Space Shuttle. It must re-enter the atmosphere at a very low trajectory so that the heat from friction will be distributed fairly evenly over the outside surface. Our metal bar needs only the same low entrance to spare it from consumption. By calculating this trajectory beforehand, we can of course make it land wherever we wish. And we will wish the ocean. Remember the gas that I had you inject into the ore? Now it has its use: the ore will float. There will be a nice, easy recovery of a pure metal. And of course, pieces can be kept in orbit for processing, at some SSoar station perhaps, into super metals. We will

then have the best in the universe at our command.

What do we need to do this now? Refined observations of the components in the asteroid belt. A watch of the asteroids that approach the Earth. The shuttle system. Long-term life support systems and systems to avoid the problems caused by long exposures to zero-G. Fabrication techniques for outer space. Is there anything in that list that sounds fantastic, unreachable? All this is being tackled right now by both scientists and corporations throughout the world.

SPEAK TO ME ONLY



I AM unable to write with the praise that this next accomplishment deserves; my figurative chin is dropped. Remember the name of Raymond Kurzweil. At a time when it seems that all research and development comes from faceless corporations, Mr. Kurzweil has, with his own money and money from friends and family, invented a machine. It's a machine that can read a book...almost any book...aloud. This machine of his can read this magazine, or my typed manuscript, or my overdue payment notices—anything in one of almost 200 typefaces...aloud. Now the strictly objective observer may claim that it has tin vocal chords, but most of us would be too astounded to notice. I think that the article by Loretta McLaughlin in the *Boston Globe's* "New England" magazine which features the Kurzweil Reading Machine would probably embarrass its modesty, that is if it were to read it, that is, if it hasn't already read it.

A computer combination of scanning and vocalizing masterpieces, the machine was invented for the blind. Braille transcripts and tapes of recorded reading have only limited availability: 1,200 of the 30,000 books published each year are transcribed, and even the 1,200 are delayed for a year or so. But soon, the blind will wait no longer than the time it takes to learn how to operate the machine plus whatever time it takes to make a trip to the library. And lest you think that 10 hours of instruction means that operating the Reader is tremendously complicated, it is as easy as pressing a button. There are buttons to make it read, re-read, spell, or literally tell the operator which button has been pushed.

Kurzweil has turned a life-long

Telescope



ENCYCLOPEDIA GALACTICA

[Continued from page 93]

fascination with computers into something that would probably have made Thomas Edison smile enviously. Kurzweil taught the Reader English just as we are taught. First, the letters of the alphabet must be mastered. This was in fact the fundamental problem. The simple geometric variations between letters and the geometric consistencies within various typefaces of the same letter are detected by our brain; the 'brain' of the computer had to do the same. Letters, once learned, make words; words make sentences. The Reader thus knew what was on a page.

OK, having learned those lessons, the Reader had to learn pronunciation. Kurzweil's predecessors tried to teach their computers each of 100,000 words. This led to very large machines and long scanning and matching periods. The Reading Machine, however, is at its bulkiest about 80 pounds; it can be put on a table top. This came about when Richard Brown and Steven Pelletier, two helpers on the project, taught the Reader rules of English pronunciation, nearly a thousand of them, plus another two thousand exceptions. That's how we learned, not by memorizing every word, but by encountering each word with a common set of rules. *Voilà!*

Among the most recent of Kurzweil's refinements is cadence. But don't worry, if you happen to have one of the first seven models, you need only a new instruction tape; the machine will not become obsolete. Once inserted, the new tape will cause your machine to speak its 200 words per minute a bit more dramatically. Just turn the pages and push the "Read" button.

Oh, and let me just add here that Raymond Kurzweil is 28 years old.

—G—

THE SKY WAS A DOME of blue-black cloud above a darkening sea; the waves flashed emerald and purple black and broke in iridescent foam upon the shore. The word for it... was unearthly...

The Ark of James Carlyle by Cherry Wilder

Catherine was supremely adaptable. Of the eight bodies which had hosted her brain since the death of her original one 185 years before, some had lasted far longer than others but none had failed her immediately. The first was the shortest, five years; the second had been twelve, but the third, that had lasted for 37 years. After that some were better and some not as good but one thing they all had in common; no matter how long the association, eventually they all moved to evict their tenant.

The Best Is Yet To Be by M. Lucie Chin

"His three men were doomed, already dying in the gray light and snow-smelling air; he saw them dead even while they stood there breathing. 'Run!' But the arrows were already snarling..."

Masters of Solitude. Part II by Marvin Kaye and Parke Godwin

"H.L. Mencken once said if you turned the country on end, California is where everything loose would fall. Hitching in looney-tune land is one reason I hear such good stories... Why was he so sure creatures from the sky walked our world?"

On The Road by Gregor Hartmann

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COMMUNAL LIVING DIRECTORY. \$1. Starfront Classroom Community, PO Box 1174-G, San Francisco, CA 94101.

NORTHWEST CHESS magazine, established 1947, buys fiction, graphics, articles. Want SF with chess theme (example: Leibner's "Midnight by the Morphy Watch"). Sample copy \$.50. P.O. Box 2951, Olympia, WA 98507.

STAR TREK FANS: Original items! Star Trek Trivia Quiz, Star Trek Word Maze. Sale Price: \$75 each or both \$1.25 + SASE to: Paul Pickett, Box 152, Bayside, NY 11361, Attention: Quiz.

CALCULATOR LIB newsletter has the information you always wanted about the new arithmetic. It takes you on the road to calculating wizardry. Copy \$2.75, postage included, satisfaction guaranteed. TECHNOLOGICAL DEVELOPMENTS, P.O. Box 2151-A, Oxnard, CA 93034.

LOCUS, the newspaper of the science fiction field, published monthly, in its tenth year, has won the Hugo three times. If you're a writer, reader, or fan, it contains everything you'd want to know about the field. Sample copy \$.75, yearly subscription \$6.00 in North America. Locus Publications, Box 3938, San Francisco CA 94119.

THE SCIENCE FICTION COLLECTOR: the fanzine for collectors and researchers of science fiction, fantasy, and related fields: indexes, bibliographies,

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biographies, articles, Bi-monthly, one year \$6.00, sample \$1.25. Grant Thiessen, 943 Maplecroft Road, Calgary, Alberta, Canada T2J 1W9.

Books

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